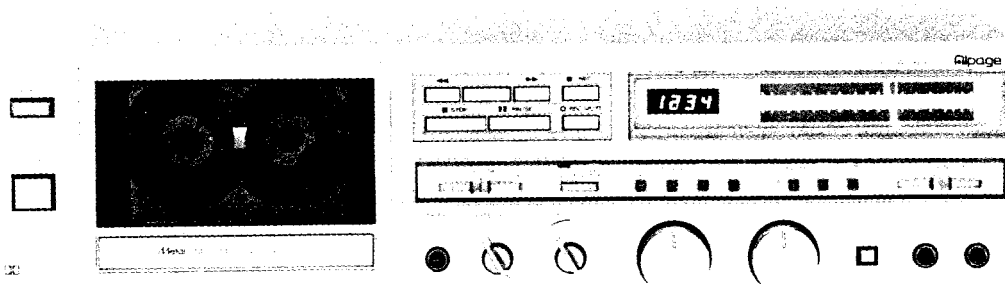
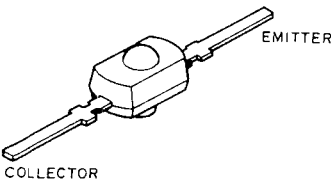
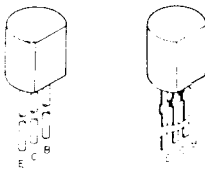

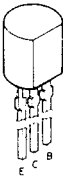

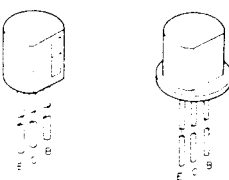


SERVICE MANUAL **Alpage**

STEREO CASSETTE DECK **AL60**



ALPINE ELECTRONICS INC.

<p>TPS605: Q1</p> 	<p>2SC1318NC-R or 2SC509: Q101, 401, 402, 551, 552, Q553, 603, 604, 605 2SA921: Q902</p> 	<p>2SD880-Y: Q102, 103 2SC235-Y or 2SD880-Y: Q901</p> 
<p>2SC945L-P or 2SC1815-GR or 2S1815-Y: Q201, 202, 301 to 320, 403, Q404, 405, 406, 501, 502, Q601, 602, 606, 903 2SC1815-Y: Q651</p> 	<p>2SC1890E,F or 2SC1980-T: Q203 to 206, 555, 556</p> 	<p>22SA733(P): Q904, 905, 906 2SC900E or 2SC732BL: Q207 to 210</p> 

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Specifications

Tape Speed (MTT-111)	4.76 cm/sec. \pm 1.5%
Wow & Flutter (JIS WTD) (MTT-111)	0.07%
FF/REW Time (C-60)	100 sec.
Rec/Play Head	Sen Dust Core
Erase Head	Double Gaps Ferrite Core
Input Sensitivity/Impedance	Mic: 0.3mV/600 ohm Line: 100mV/50K ohm
Signal to Noise Ratio	55 dB
Distortion	2%
Frequency Response	31.5 Hz to 14 KHz
Stereo Separation	35 dB
Crosstalk	60 dB
Input Power	25W
Input Voltage	110/127/220/240V AC 50/60 Hz (Multi voltage Model) 120V AC 60 Hz (Single voltage Model)
Output Level/Impedance	Line: 500mV/100K ohm Headphone: 65mV/8 ohm
Take Up Torque	35 ~ 60 gcm
Semi-conductors	18 IC's, 60 Transistors, 48 Diodes, 3 Zener Diodes, 1 Bridge Diode
Dimensions (W x H x D)	435 x 116 x 254mm
Weight	5.3 Kg

Parts Location and Disassembly Instructions

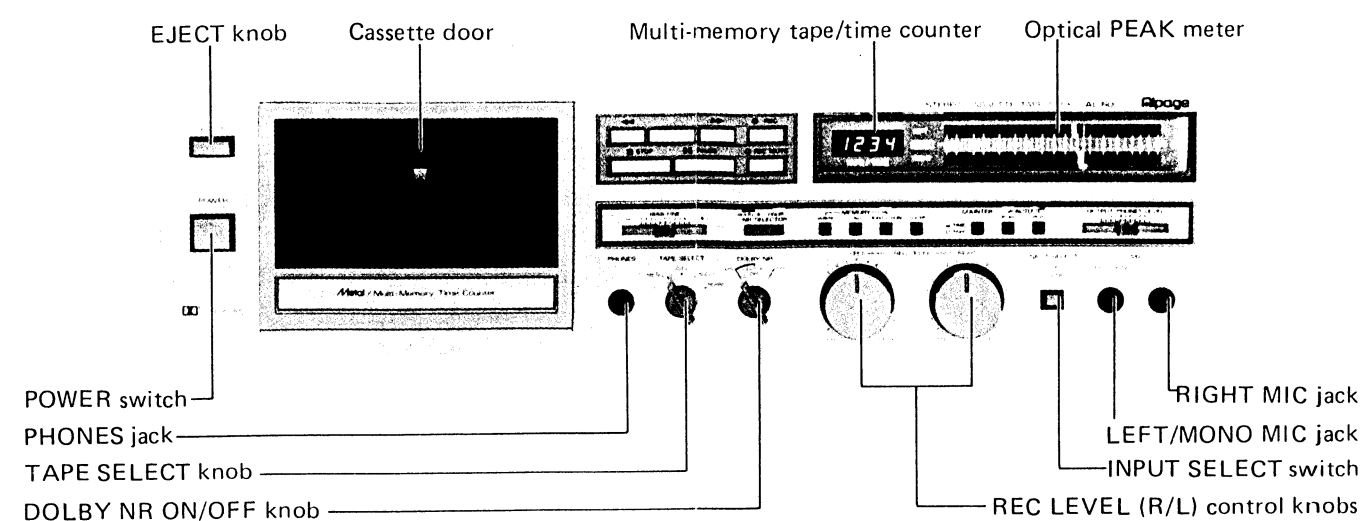


Figure 1

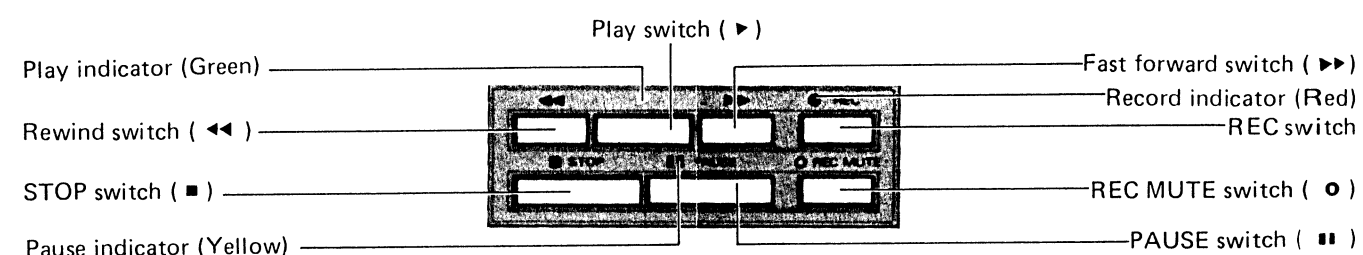


Figure 2

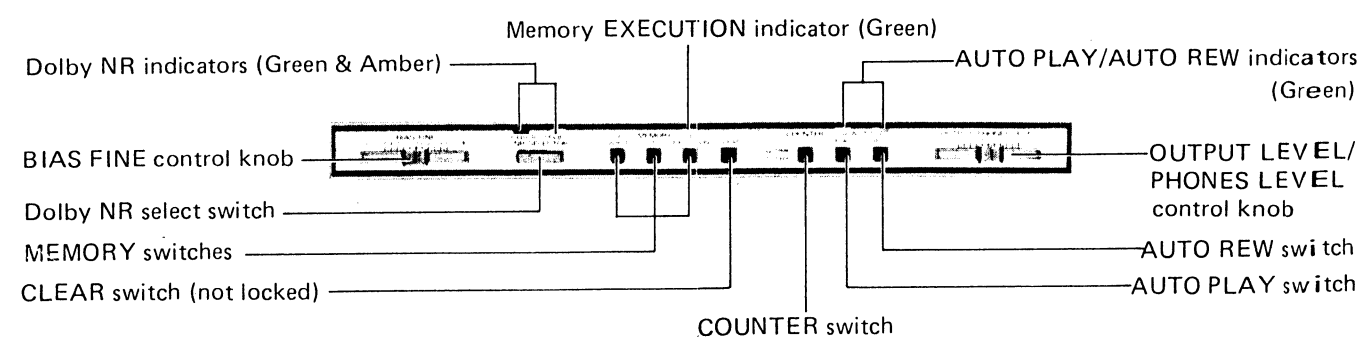


Figure 3

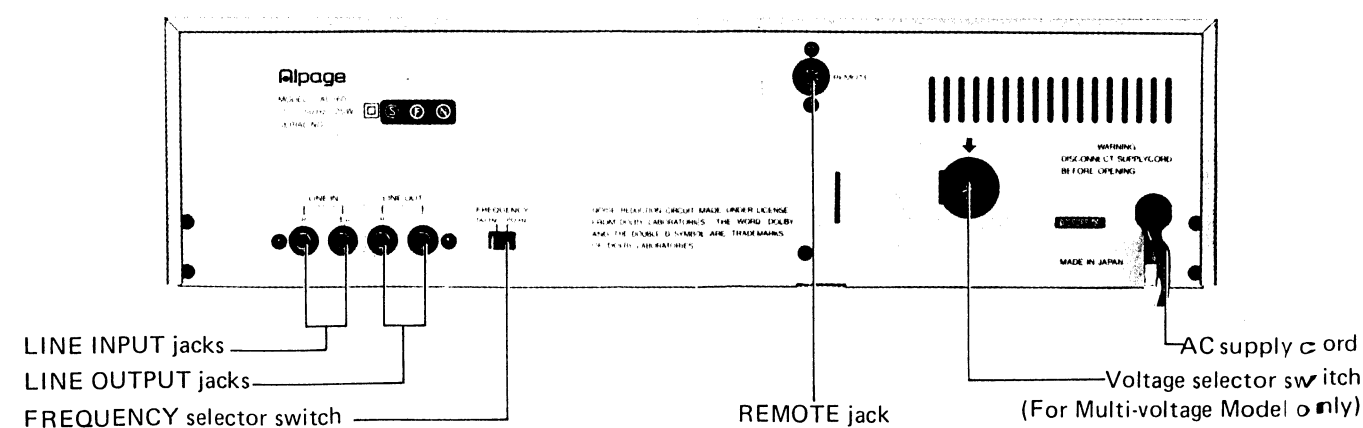


Figure 4

1. Removal of Top Cover

- (1) Remove six screws marked "○" as shown in Figures 5 and 6.
- (2) Remove the top cover in the direction of the arrow as shown in Figure 5.

2. Removal of Front Panel with Keyboard

- (1) After removal of top cover, pull out six knobs as shown in Figure 5.
- (2) Remove the cassette door upward as shown in Figure 5.
- (3) Remove seven screws marked "△" as shown in Figures 7 and 8.
- (4) Disconnect all wires from the Keyboard switch P.C. Board.
- (5) Remove the front panel, with Keyboard switch P.C. Board.

3. Removal of Rear Cover

- (1) Remove five screws marked "⊕" as shown in Figure 6.
- (2) Remove four tacks as shown in Figure 6.
- (3) Remove the rear cover.

4. Removal of Master Board P.C. Board

- (1) After removal of rear cover, remove four screws marked "□" as shown in Figure 7.
- (2) Remove three jack stoppers as shown in Figure 9.
- (3) Remove four nuts as shown in Figure 9.
- (4) Disconnect all wires from the P.C. Board.

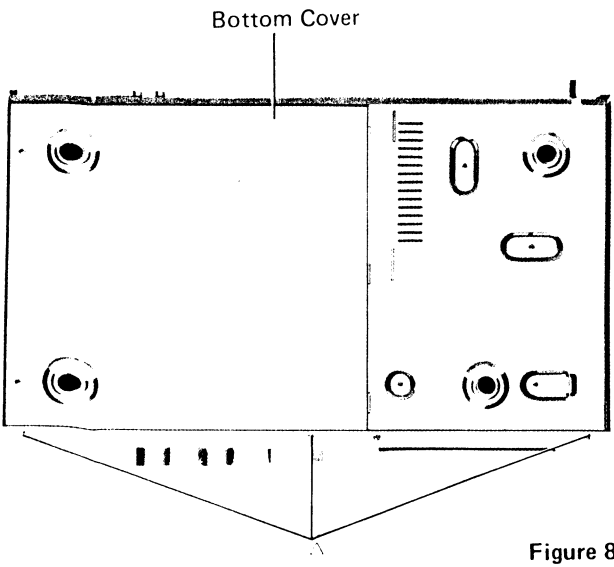


Figure 8

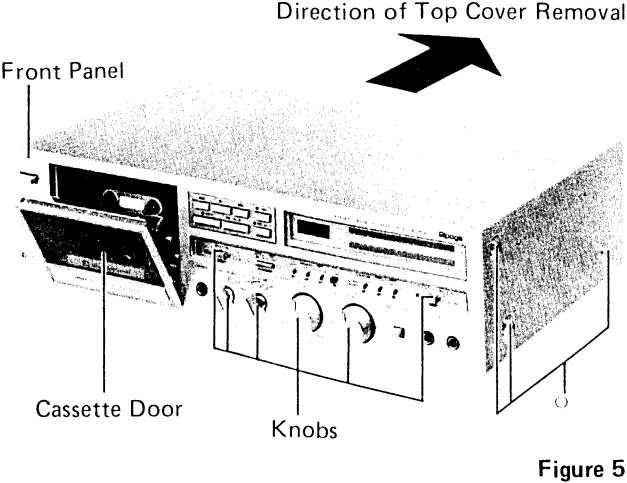


Figure 5

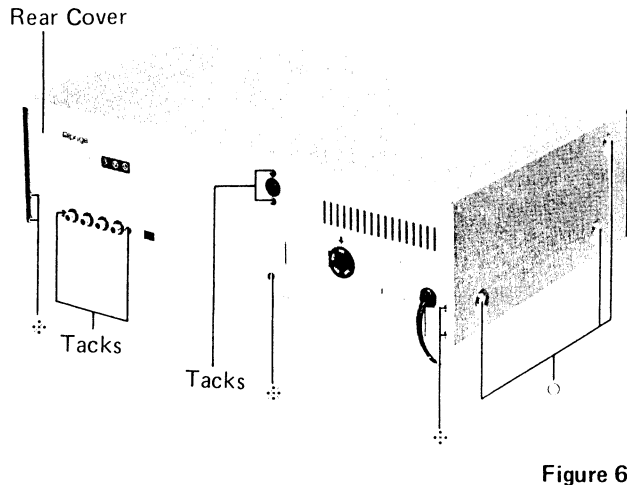


Figure 6

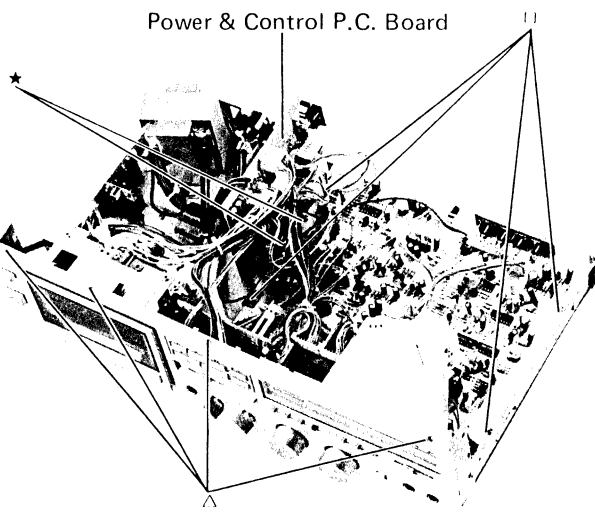


Figure 7

5. Removal of Power & Control P.C. Board

- (1) After removal of top cover and rear cover, remove two screws marked "★" as shown in Figure 7.
- (2) Disconnect all wires from the P.C. Board.

6. Removal of Switch & Volume P.C. Board

- (1) After removal of top cover and front panel, remove five screws marked "▲" as shown in Figure 9.
- (2) Disconnect all wires from the P.C. Board.

7. Removal of Optical Meter with FL. Counter & Lamp P.C. Board

- (1) After removal of top cover and front panel, remove three screws marked "#" as shown in Figure 10.
- (2) Disconnect all wires from the FL counter and Lamp P.C. Board.
- (3) Remove the optical meter with FL counter and Lamp P.C. Board.

8. Removal of Cassette Deck

- (1) Remove the top cover (Refer to page 4).
- (2) Push EJECT button to open the cassette door.
- (3) Pull the cassette cover ① in the direction of the arrow as shown in Figure 11 to take it off from the deck.
- (4) Remove five screws (② to ⑥) as shown in Figure 11 to take off from the deck.
- (5) Remove the connector ⑦ to take off from the cassette deck as shown in Figure 11.
- (6) Remove the connectors ⑧ and ⑨ from waster board P.C. Board as shown in Figure 11.
- (7) Remove the connector ⑩ from power & control P.C. Board as shown in Figure 11.
- (8) Remove the connectors ⑪ and ⑫ from power & control P.C. Board to take off the cassette deck from inside the set as shown in Figure 12.

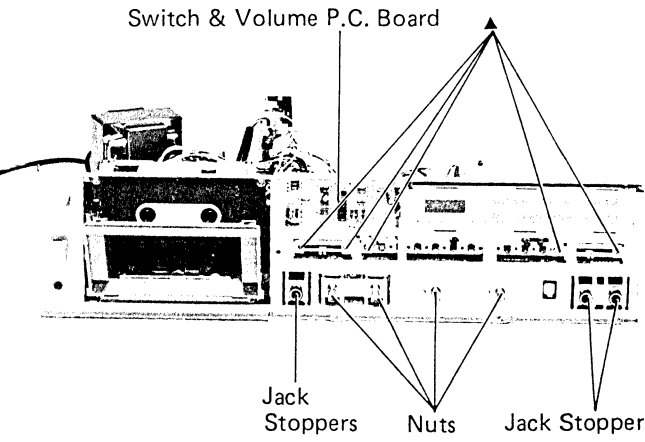


Figure 9

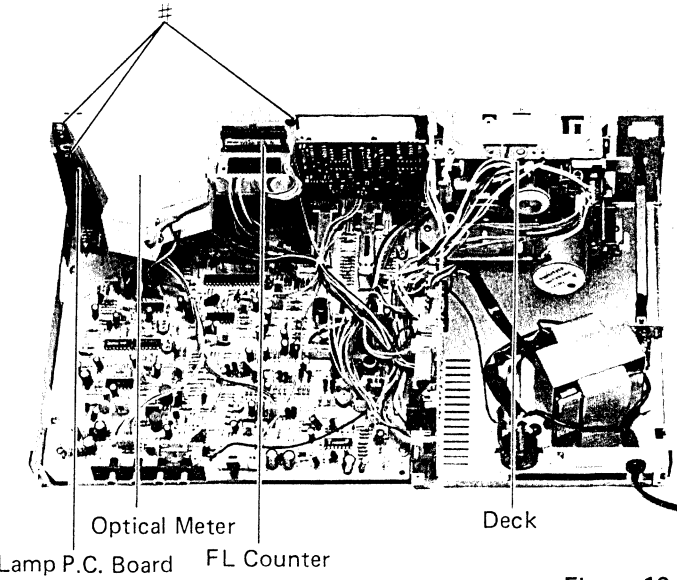


Figure 10

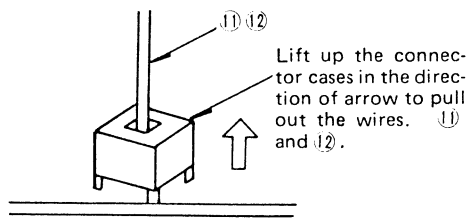


Figure 12

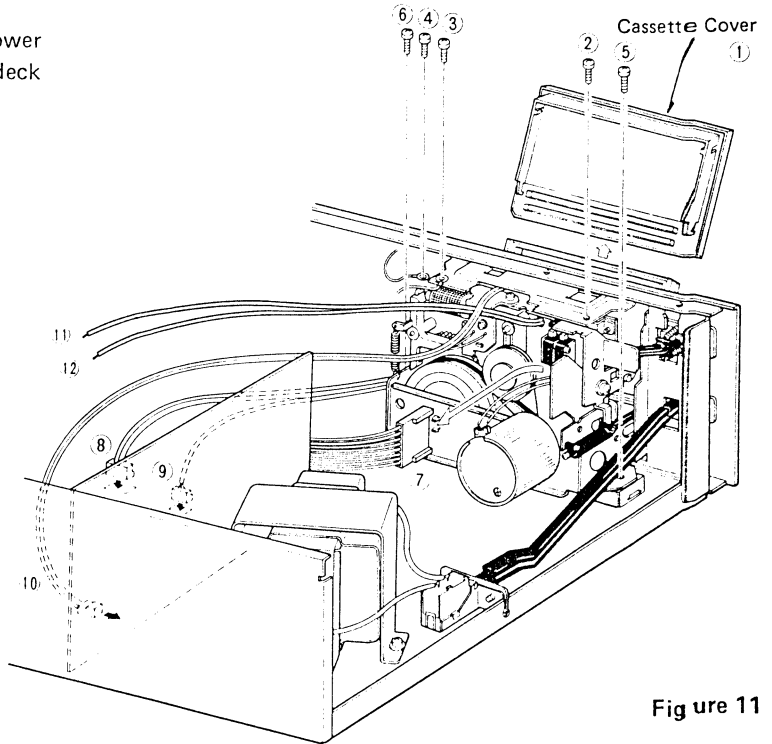


Figure 11

Adjustment Procedures

STEP	DESCRIPTION			MODE (SWITCH)	ADJUST POINTS	TEST POINTS	CONNECTION INSTRUCTION	REMARKS	
1	Head Azimuth Adjustment			Play Tape: Nor NR: Off	Head Azimuth Screw (Figure 14)	Line Out	Figure 13	Test Tape: MTT-114 Adjust for Maximum Output VR: Max (VR401)	
2	Dolby Level Adjustment	①	Encode Level Adjustment	Record Tape: Nor NR: Off	VR503 VR504	T.P.1 T.P.2	Figure 15	Line Input: 400 Hz, 300mV Test Point Output: 580mV	
					VR303 VR304	T.P.3 T.P.4	Figure 15	Test Point Output: 580mV	
		②	Decode Level Adjustment	Play Tape: Nor NR: Off	VR201 VR202	T.P.3 T.P.4	Figure 16	Test Tape: MTT-150 Test Point Output: 580mV	
					VR301 VR302	T.P.1 T.P.2	Figure 16	Test Point Output: 580mV	
3	Input Adjustment			Record Tape: Nor NR: Off	VR503 VR504	Line Out	Figure 15	Line Input: 400 Hz, 300mV Test Point Output: 500mV	
	Level Meter Adjustment			Record Tape: Nor NR: Off	VR403 VR404	Level Meter Reading	Figure 15	Line Input: 400 Hz, 300mV Adjust for 0 dB	
4	Recording Level Adjustment			Record Tape: Nor NR: Off	VR501 VR502	T.P.5 T.P.6	Figure 15	Line Input: 400 Hz, 300mV Line Output: 500mV Test Point Output: 4.5mV Bias Cut: Remove a connector “CB901” (See Adjustment Location)	
5	Recording Bias Adjustment			①	Record Tape: Metal NR: Off	VR555 VR556	T.P.5 T.P.6	Figure 17	Input: Non Test Point Output: 100mV
				②	Record Tape: CrO ₂ NR: Off	VR557 VR558	T.P.5 T.P.6	Figure 17	Input: Non Test Point Output: 55mV
				③	Record Tape FeCr NR: Off	VR559	T.P.5 T.P.6	Figure 17	Input: Non Test Point Output: 50mV
					Record Tape : Nor NR: Off	VR553	T.P.5 T.P.6	Figure 17	Input: Non Test Point Output: 45mV

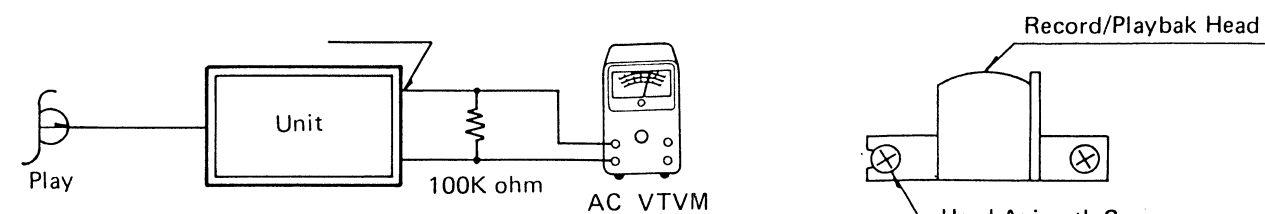


Figure 13

Figure 14

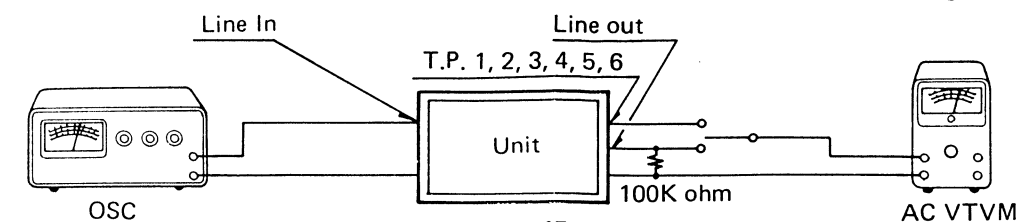


Figure 15

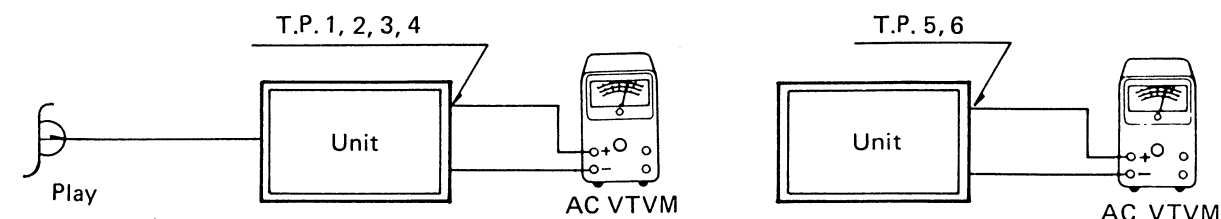
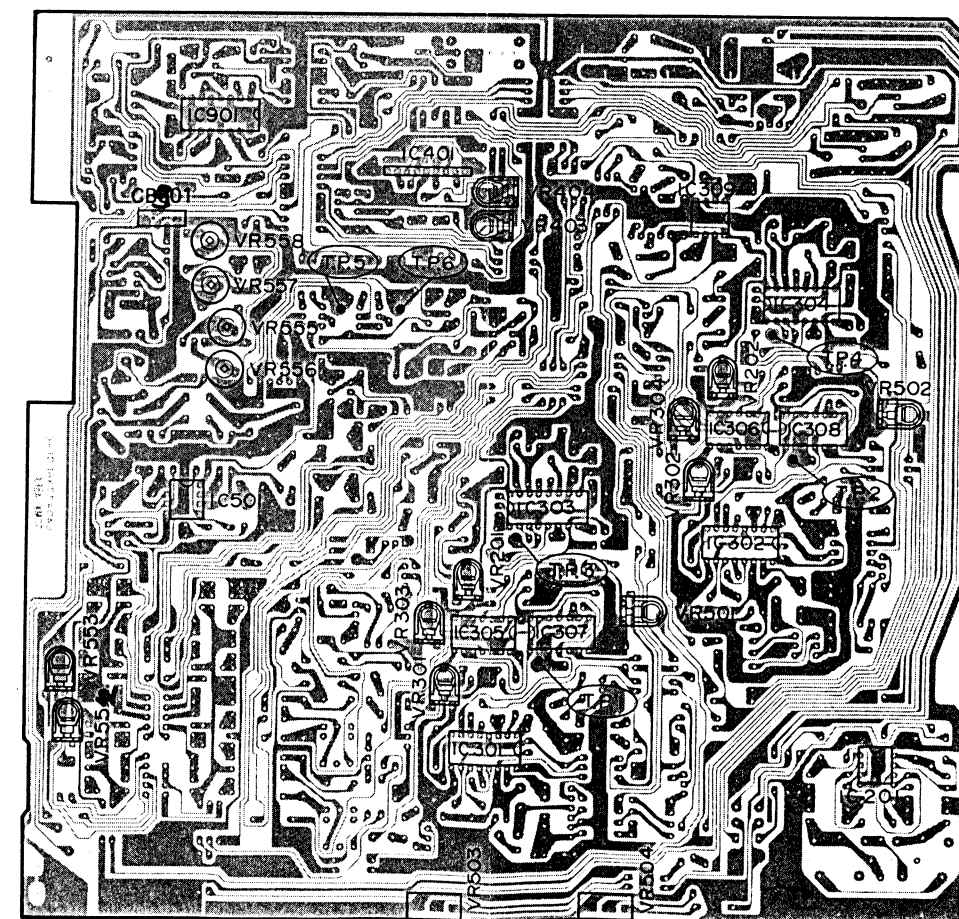


Figure 16

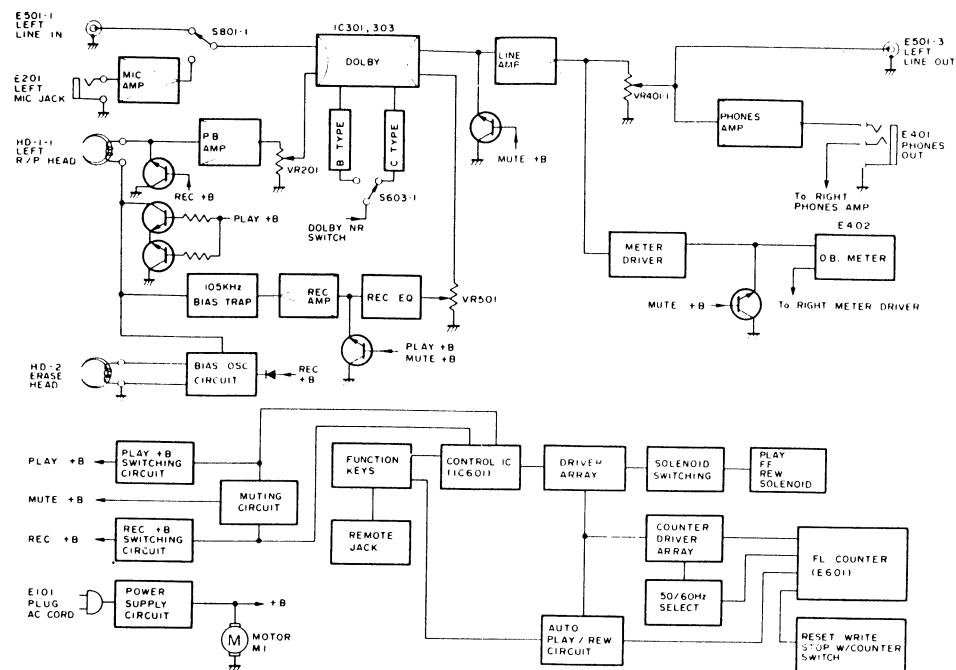
Figure 17

Adjustment Locations



Master P.C. Board

Block Diagram



Replacement of Mechanical Parts

Removal of Cassette Deck

- (1) Remove the cassette deck. (Refer to page 5)

Replacement of Head

- (1) Remove two screws marked "▲" from the cassette door bracket of the cassette deck as shown in Figure 19, and the cassette door can be removed.
- (2) Remove two screws marked "□" and wires from both sides of the recording head "A" as shown in Figure 18, and it can be removed. Remove two screws marked "■" and wires from both sides of the erase head "B" as shown in Figure 18, and it can be removed.
- (3) After replacement with a perfect head, put it together in the opposite way to disassembly.
- (4) After finishing assembling, adjust head azimuth with test tape (MTT-114). (Refer to page 6)
Apply screw lock after adjustment.

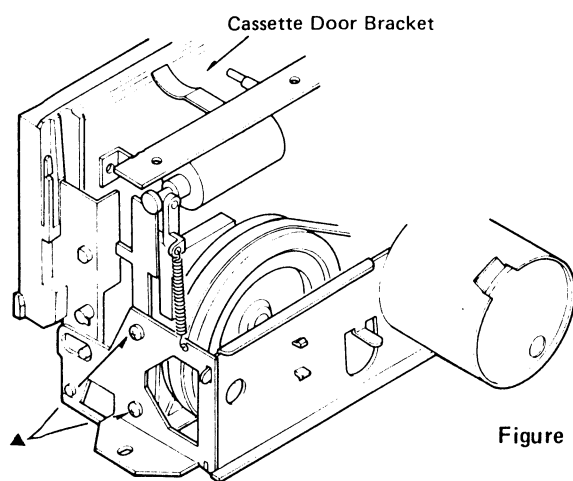


Figure 19

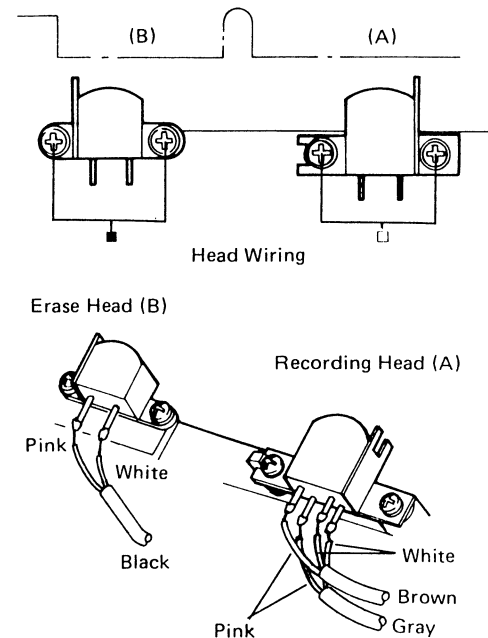


Figure 18

Replacement of Belt and Flywheel

- (1) Remove a screw marked "□" and the motor bracket, two belts and the flywheel can be removed as shown in Figure 20.
- (2) After replacement with a perfect belt and a flywheel, clean them with isopropyl alcohol and put them together in the opposite way to disassembly.
- (3) After finishing assembling, confirm tape speed and wow/flutter with test tape (MTT-111).

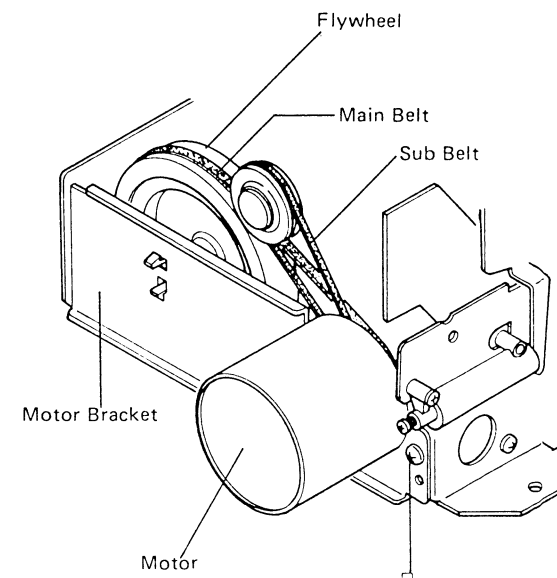


Figure 20

Replacement of Motor

- (1) Remove a screw marked "□" as shown in Figure 20 and two screws marked "★" and two wires (white, white/red) from motor side as shown in Figure 21, and the motor can be removed.
- (2) After replacement with a perfect motor, put it back in the opposite way to disassembly.
- (3) After finishing assembling, confirm tape speed and wow/flutter with test tape (MTT-111).

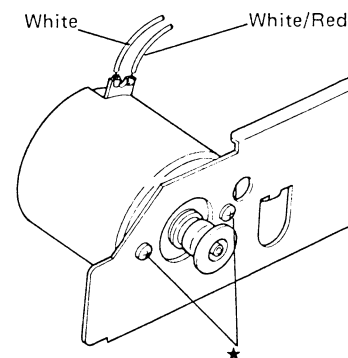


Figure 21

Replacement of Pinch Roller

- (1) Remove a washer to take off pinch roller assembly from the cassette deck as shown in Figure 22.
- (2) After replacement with a perfect pinch roller, clean it with isopropyl alcohol and put it back in the opposite way to disassembly.
- (3) After finishing assembling, confirm tape speed and wow/flutter with test tape (MTT-111).

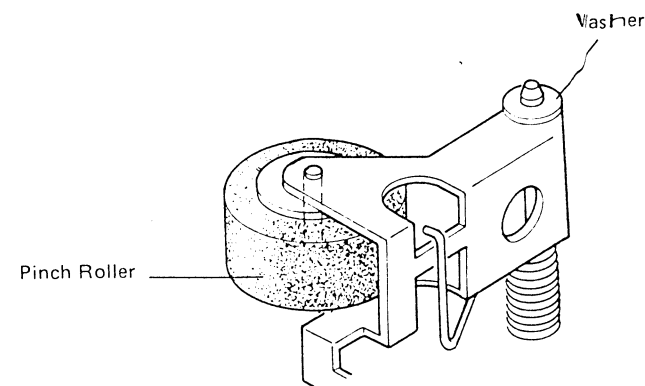


Figure 22

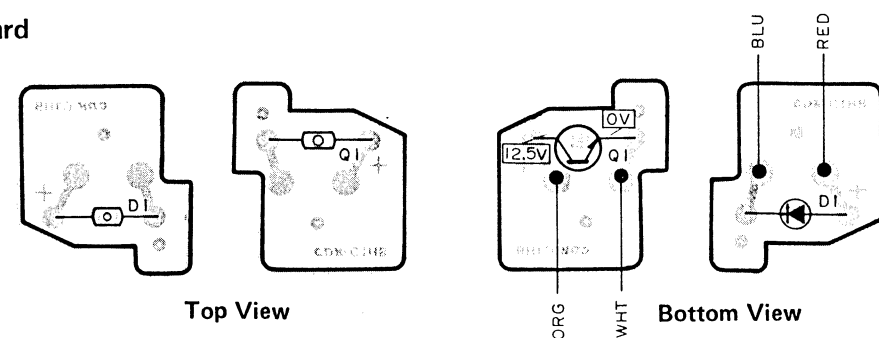
Trouble Shooting

Symptom	Possible Cause	Remedies
No power	<ol style="list-style-type: none"> 1. Defective power switch 2. Defective DC supply block 3. Defective power connections 	<ol style="list-style-type: none"> 1. Replace switch. 2. Check and repair DC power. 3. Check and repair wiring.
No power to motor	<ol style="list-style-type: none"> 1. Defective motor 2. Defective Servo 	<ol style="list-style-type: none"> 1. Replace motor. 2. Replace motor.
Distorted sound	<ol style="list-style-type: none"> 1. Record/Play head dirty 2. Defective cassette tape 3. Record/Play head magnetized 4. Record/Play head defective 	<ol style="list-style-type: none"> 1. Clean head. 2. Replace tape. 3. Demagnetize head with head eraser. 4. Replace head.
High frequency deteriorated	<ol style="list-style-type: none"> 1. Record/Play head Azimuth improperly adjusted 2. Record/Play head dirty 3. Record/Play head magnetized 4. Excessive Wow/Flutter 5. Record/Play head defective 6. Cassette tape defective 	<ol style="list-style-type: none"> 1. Readjust head azimuth. 2. Clean head. 3. Demagnetize head. 4. Follow the item under excessive Wow/Flutter. 5. Replace head. 6. Replace tape.
Excessive Wow/Flutter	<ol style="list-style-type: none"> 1. Flywheel assembly defective 2. Motor defective 3. Defective Servo 4. Drive belt defective 5. Pinch Roller assembly defective 6. Slippage between tape and pinch roller 7. Idler pulley defective 8. Tape counter defective 9. Improper take-up torque 10. Defective tape cassette 	<ol style="list-style-type: none"> 1. Replace with better one. 2. Replace motor. 3. Replace motor. 4. Replace drive belt. 5. Replace with better one. 6. Clean pinch roller. 7. Replace idler pulley. 8. Replace tape counter. 9. Replace take-up mechanism clean oil and dirt from turntable and take-up roller. 10. Replace tape.
Signal-to-Noise Ratio Deteriorated	<ol style="list-style-type: none"> 1. Record/Play head magnetized 2. Record/Play head dirty 3. Record/Play head defective 4. Output amplifier defective 5. Cassette tape defective 	<ol style="list-style-type: none"> 1. Demagnetize head. 2. Clean head. 3. Replace head. 4. Repair amplifier. 5. Replace tape.
Loss of channel separation	<ol style="list-style-type: none"> 1. Record/Play head defective 	<ol style="list-style-type: none"> 1. Replace head.
Level variations	<ol style="list-style-type: none"> 1. Record/Play head dirty 2. Record/Play head defective 3. Record/Play head misadjusted 4. Cassette tape defective 	<ol style="list-style-type: none"> 1. Clean head. 2. Replace head. 3. Readjust head. 4. Replace tape.
Improper tape travel	<ol style="list-style-type: none"> 1. Pinch roller misadjusted 2. Weak pinch roller pressure 3. Capstan defective (Binding is Bearing) 4. Pinch roller defective 5. Record/Play head misadjusted 	<ol style="list-style-type: none"> 1. Reinstall pinch roller. 2. Replace pinch roller spring. 3. Clean bearing and Lubricate. 4. Replace pinch roller. 5. Readjust head.

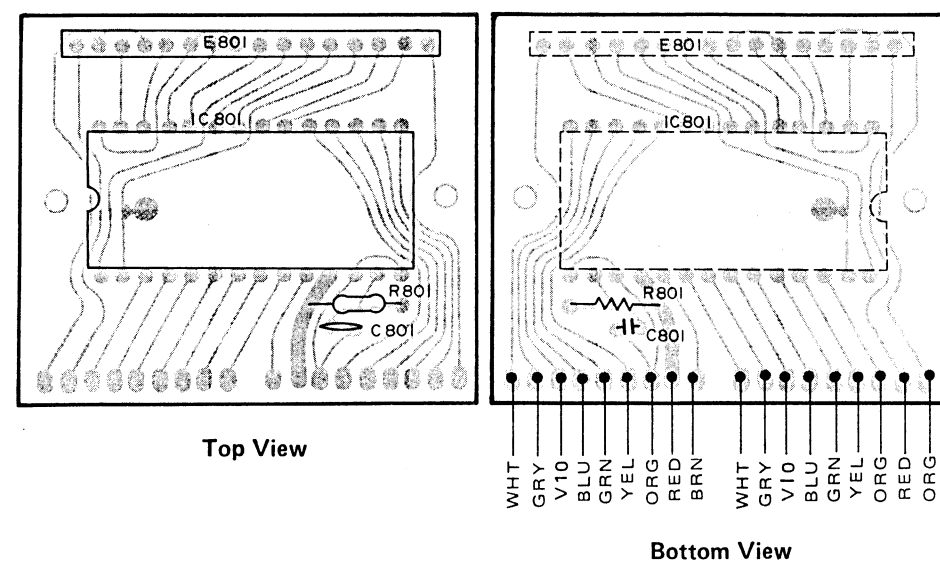
Symptom	Possible Cause	Remedies
Tape speed too fast/slow	<ol style="list-style-type: none"> 1. Defective cassette tape 2. Defective motor 3. Defective servo 	<ol style="list-style-type: none"> 1. Replace tape. 2. Replace motor. 3. Replace motor.
Tape does not move	<ol style="list-style-type: none"> 1. Defective cassette tape 2. Defective motor 3. Defective servo 4. Drive belt off 5. Reel hub defective 6. Pinch roller not contacting capstan 7. Defective power connections 8. Cassette loaded incorrectly 9. Drive belt out of place 	<ol style="list-style-type: none"> 1. Replace tape. 2. Replace motor. 3. Replace motor. 4. Replace belt. 5. Replace reel. 6. Replace pinch roller spring. 7. Check and repair wiring. 8. Set the tape properly. 9. Reinstall belt.
Drive belt out of place	<ol style="list-style-type: none"> 1. Idler pulley misadjusted 2. Motor misadjusted 3. Drive belt defective 4. Excessive clearance between flywheel and flywheel spacer 	<ol style="list-style-type: none"> 1. Reinstall idler pulley. 2. Reinstall motor. 3. Replace belt. 4. Replace flywheel spacer.
Does not record	<ol style="list-style-type: none"> 1. Record/Play head defective 2. Record/Play head dirty 3. Record amp defective 4. Defective record interlock switch 5. Cassette has safety tabs removed 6. Broken head wire 7. Bias oscillator defective 8. Input jack defective 	<ol style="list-style-type: none"> 1. Replace head. 2. Clean head. 3. Repair amplifier. 4. Replace switch. 5. Fix tabs. 6. Check and repair wiring. 7. Check and repair. 8. Replace jack.
Does not playback	<ol style="list-style-type: none"> 1. Record/Play head dirty 2. Record/Play head defective 3. Defective playback amplifier 4. Defective output buffer amplifier 5. Defective tape output jack 6. Defective Dolby circuit 7. Wire between Record/Play head and playback amplifier broken 8. Improper tape travel 9. Defective preamp output jack 	<ol style="list-style-type: none"> 1. Clean head 2. Replace head. 3. Repair amplifier. 4. Repair amplifier. 5. Replace jack. 6. Repair Dolby circuit. 7. Check wiring and repair amplifier. 8. Replace tape. 9. Replace jack
Does not erase	<ol style="list-style-type: none"> 1. Defective erase head 2. Erase head dirty 3. Bias oscillator defective 4. Broken wire on head 	<ol style="list-style-type: none"> 1. Replace head. 2. Clean head. 3. Check and repair bias oscillator 4. Resolder wire.

Parts Layout on P.C. Boards

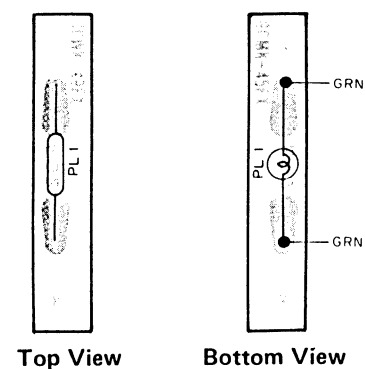
Sensor P.C. Board



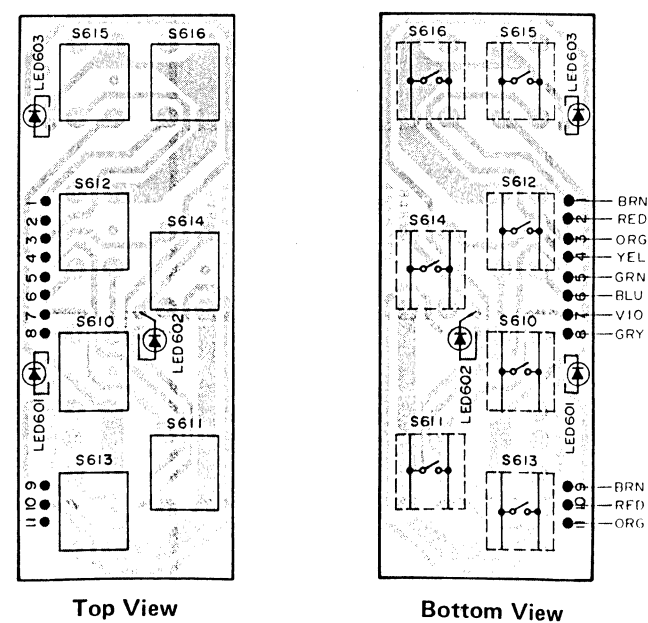
F.L. Counter P.C. Board



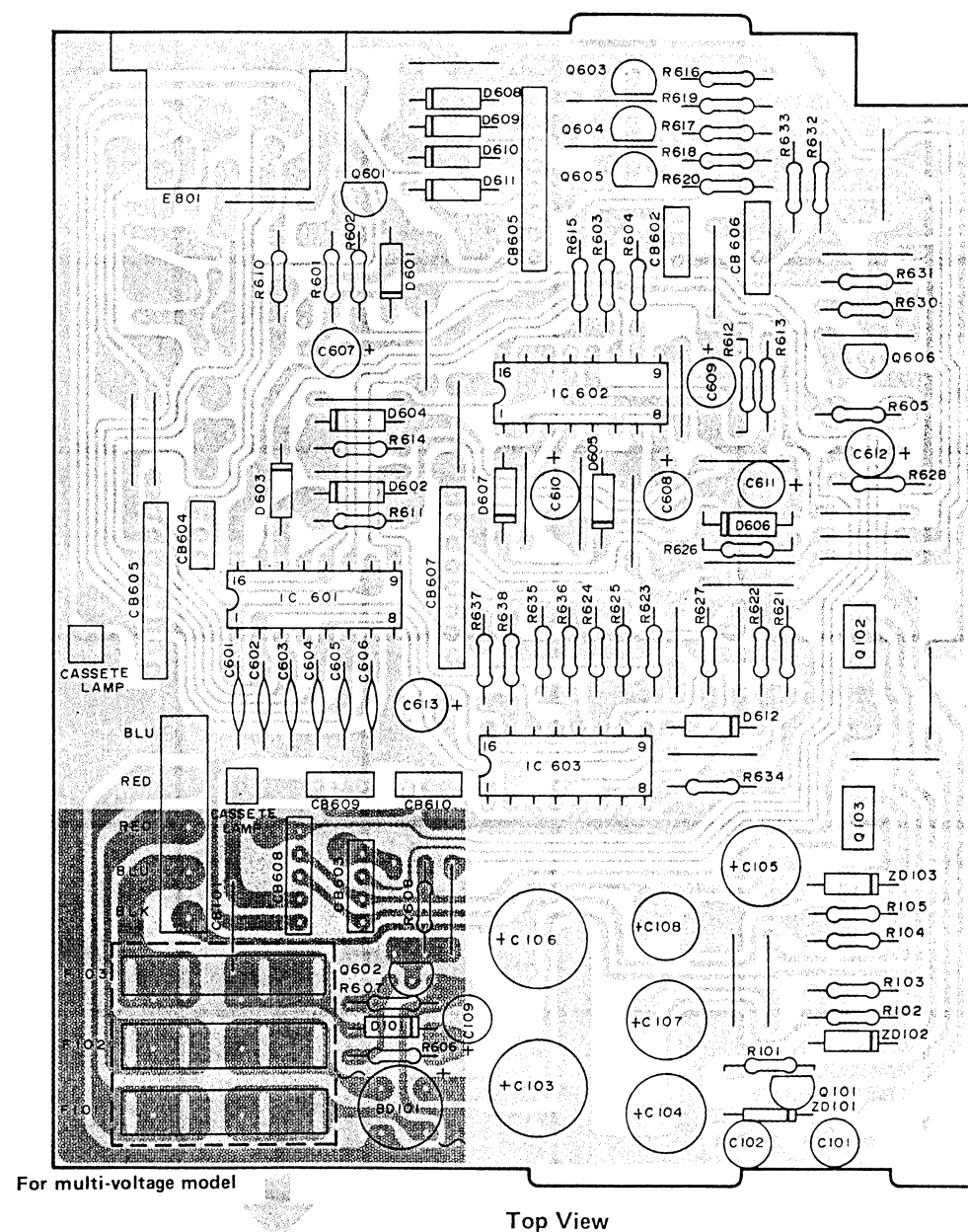
Lamp P.C. Board



Key Board P.C. Board

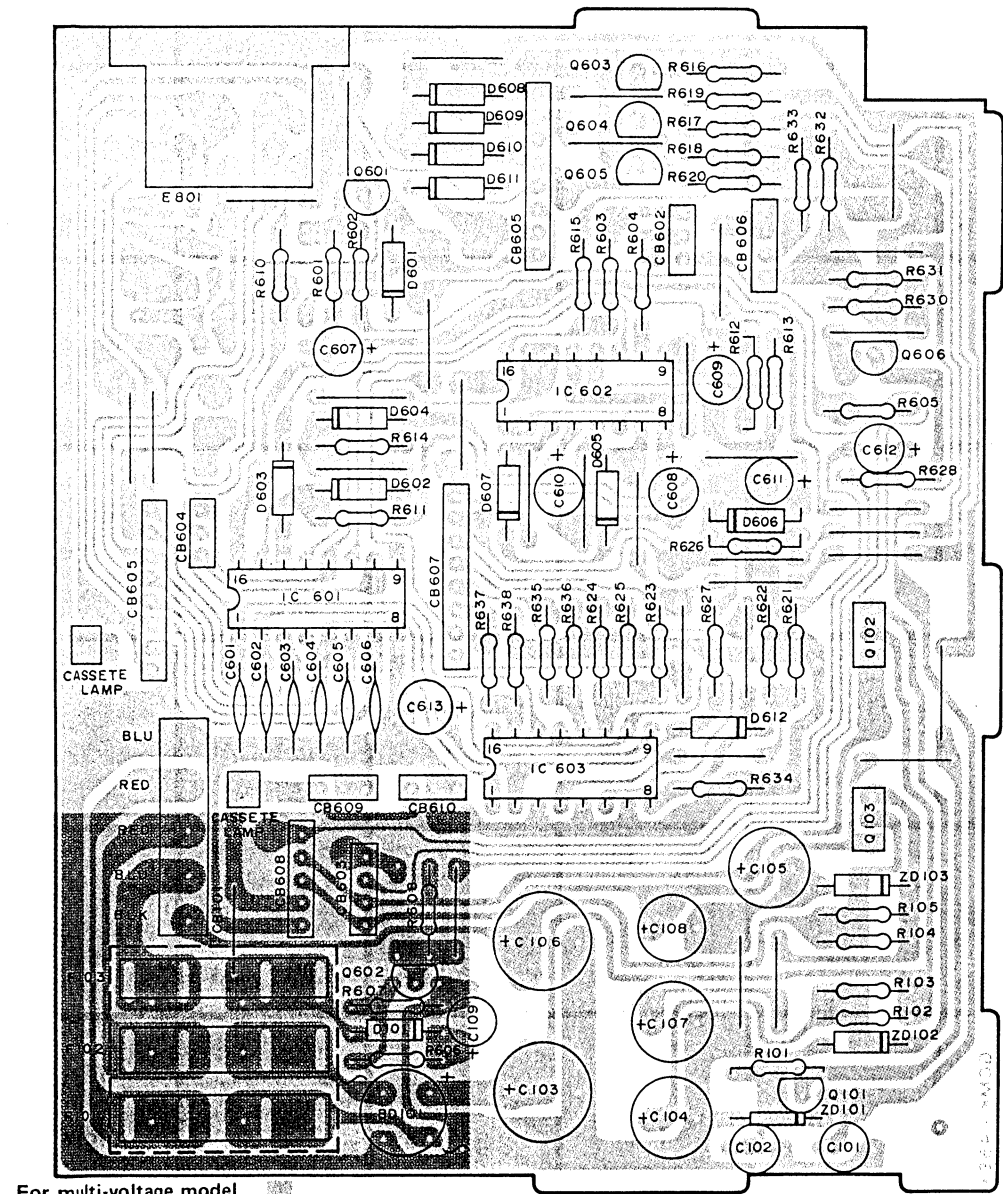


Power & Control P.C. Board



1	5.3V
2	5.3V
3	5.3V
4	
5	5.3V
6	5.3V
7	5.3V
8	OV
9	5.3V
10	REC OTHER
11	PAUSE OTHER
12	PLAY OTHER
13	REW OTHER
14	FF,REW OTHER
15	FF OTHER
16	5.3V

IC 603	
1	5.3V
2	0V
3	0V
4	0V
5	
6	0V
7	0V
8	0V
9	5.3V
10	0V
11	0V
12	0V
13	0V
14	5.3V
15	0V
16	0V



Top View

IC601

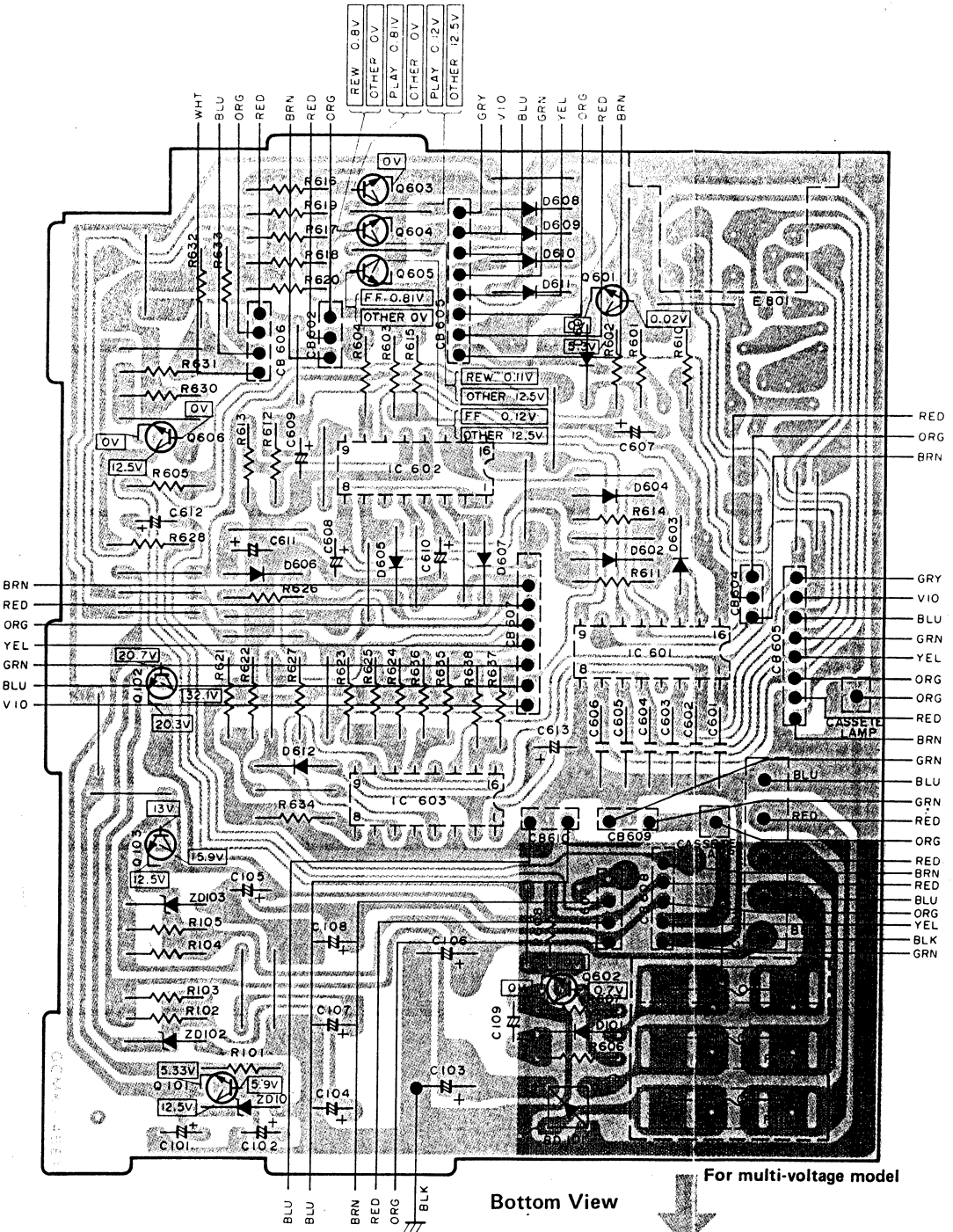
1	5.3V
2	5.3V
3	5.3V
4	
5	5.3V
6	5.3V
7	5.3V
8	0V
9	5.3V
10	REC 4.5V
	OTHER 0V
	PAUSE 5.2V
11	OTHER 0V
	PLAY 4.9V
12	OTHER 0V
13	REW 5.1V
	OTHER 0V
14	FF,REW 5V
	OTHER 0V
15	FF 5.3V
	OTHER 0V
16	5.3V

IC603

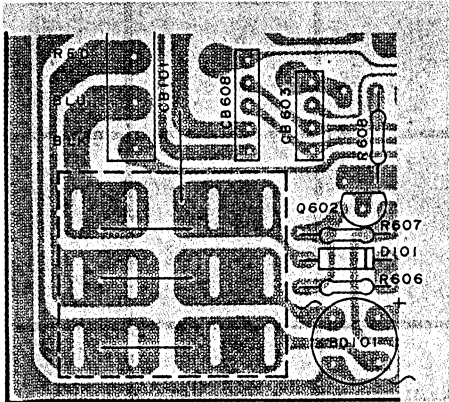
1	5.3V
2	0V
3	0V
4	0V
5	
6	0V
7	0V
8	0V
9	5.3V
10	0V
11	0V
12	0V
13	0V
14	5.3V
15	0V
16	0V

IC602

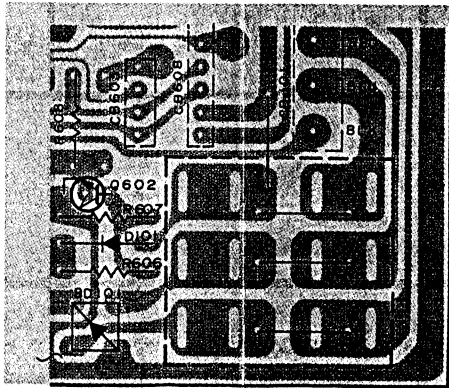
1	12.5V
2	12.5V
3	
4	REW 4.8V
	OTHER 0V
5	
6	12.5V
7	FF 4.3V
	OTHER 0V
8	FF 4.9V
	OTHER 0V
9	12.5V
10	PAUSE 4.5V
	OTHER 0V
11	PAUSE 5.2V
	OTHER 0V
12	FF,REW 0.6V
	OTHER 0V
13	0V
14	PLAY 4.9V
	OTHER 0V
15	PLAY 4.9V
	OTHER 0V
16	PLAY 4.2V
	OTHER 0V



Bottom View



For single-voltage model

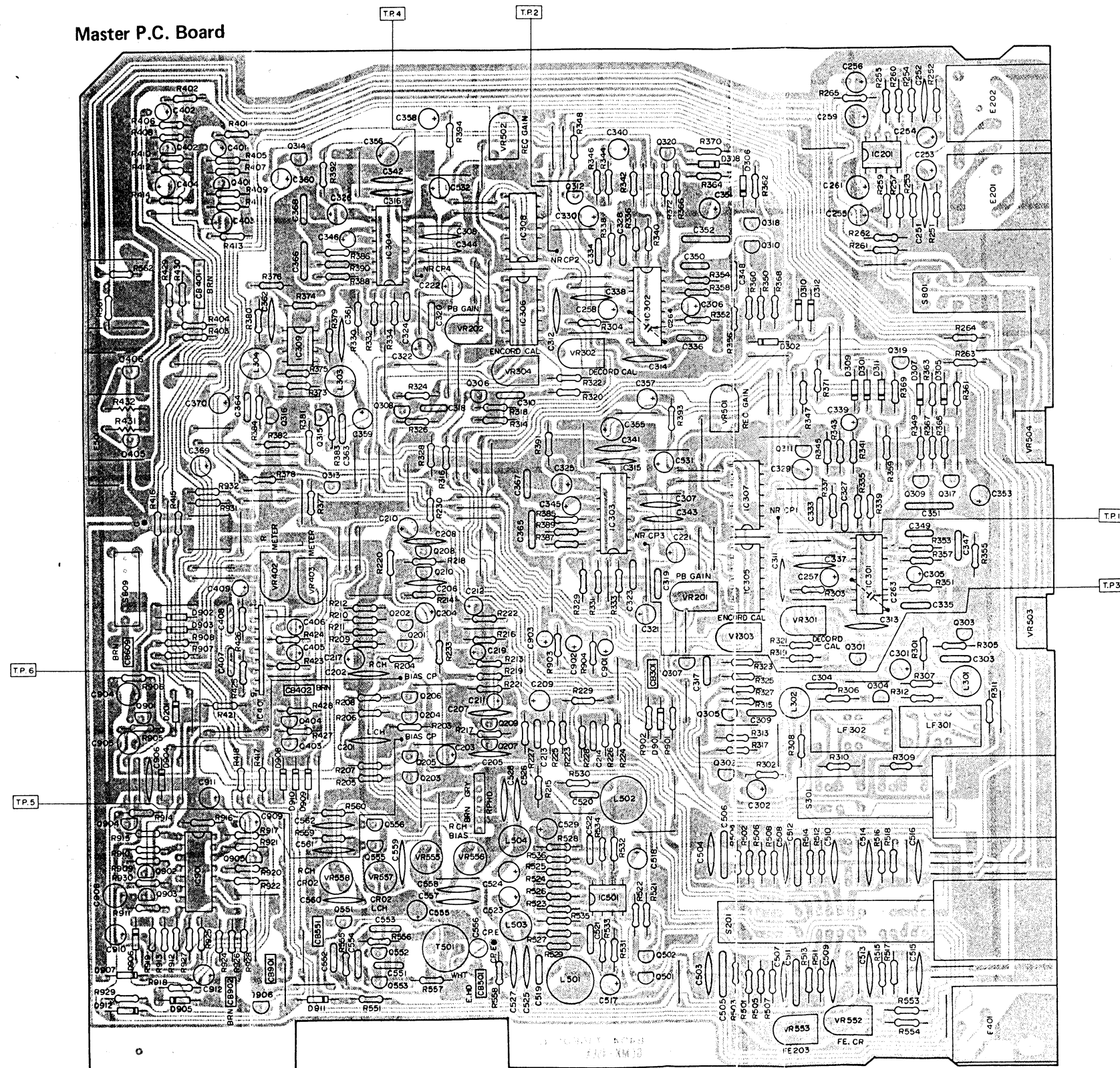


For single-voltage model

AL-60

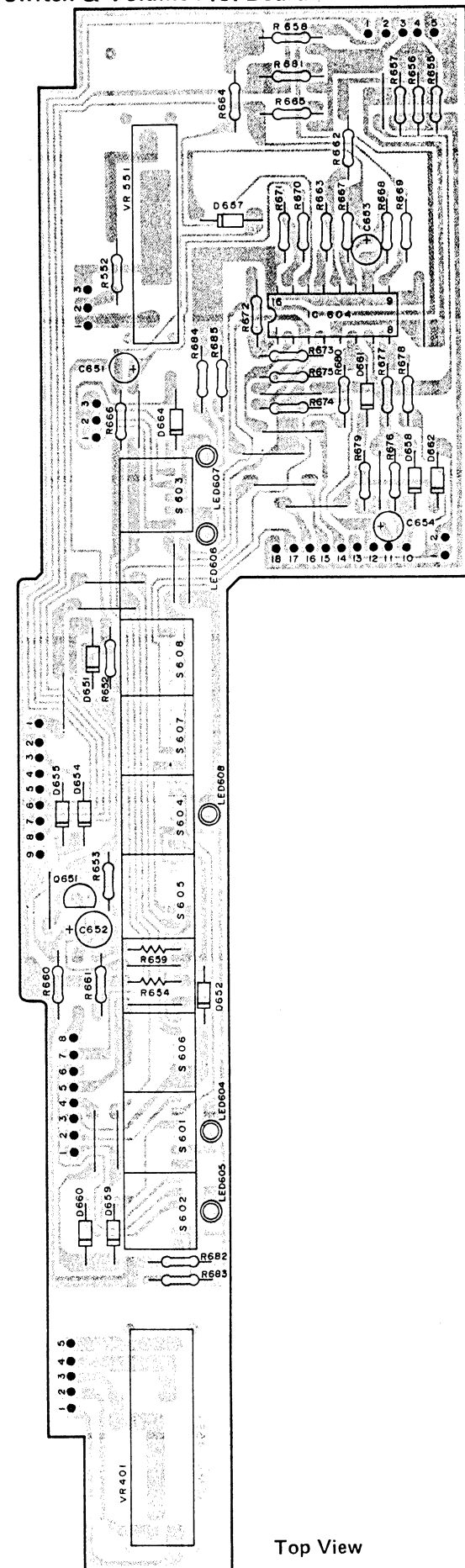
AL-60

Master P.C. Board



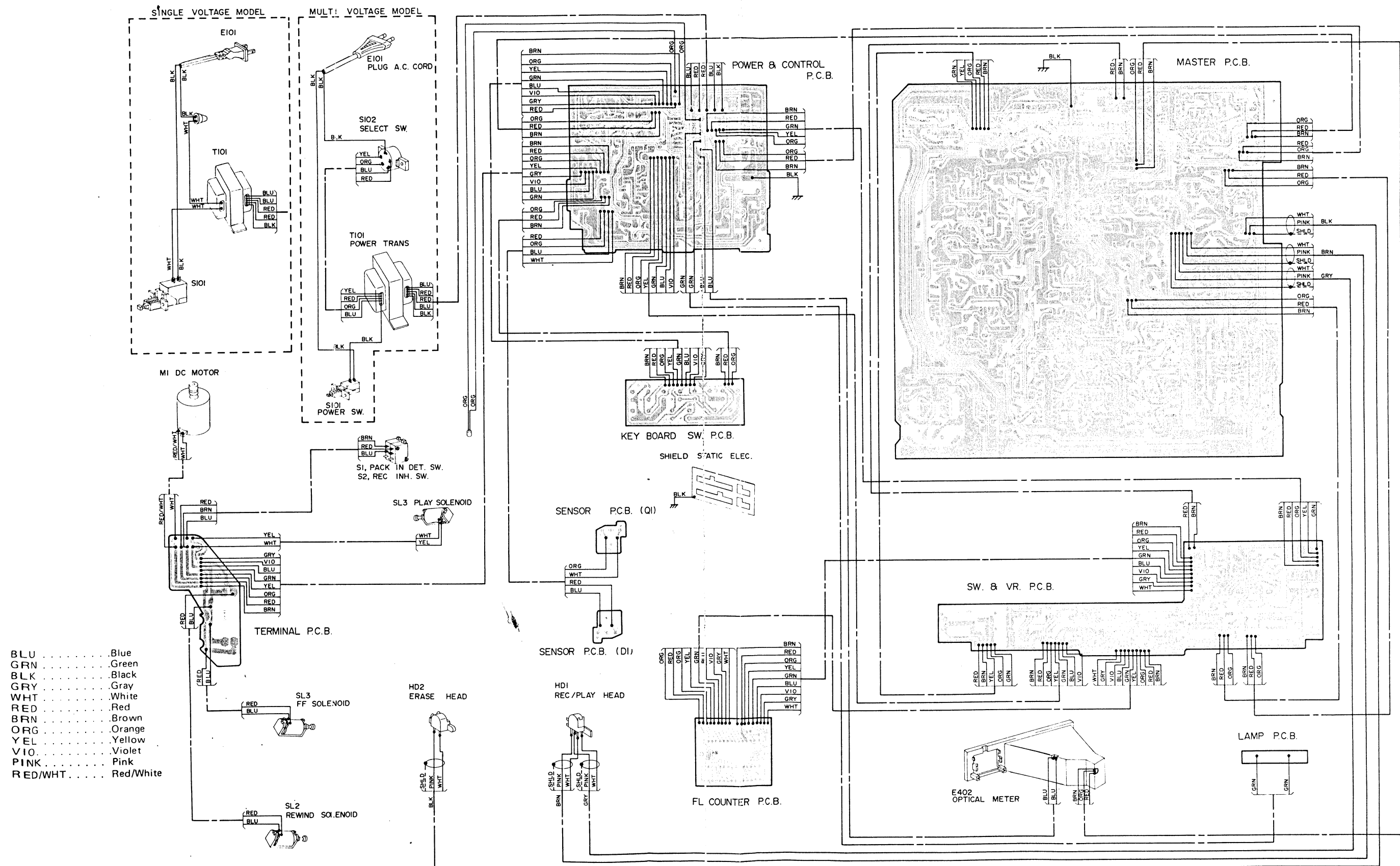
Top View

Switch & Volume P.C. Board

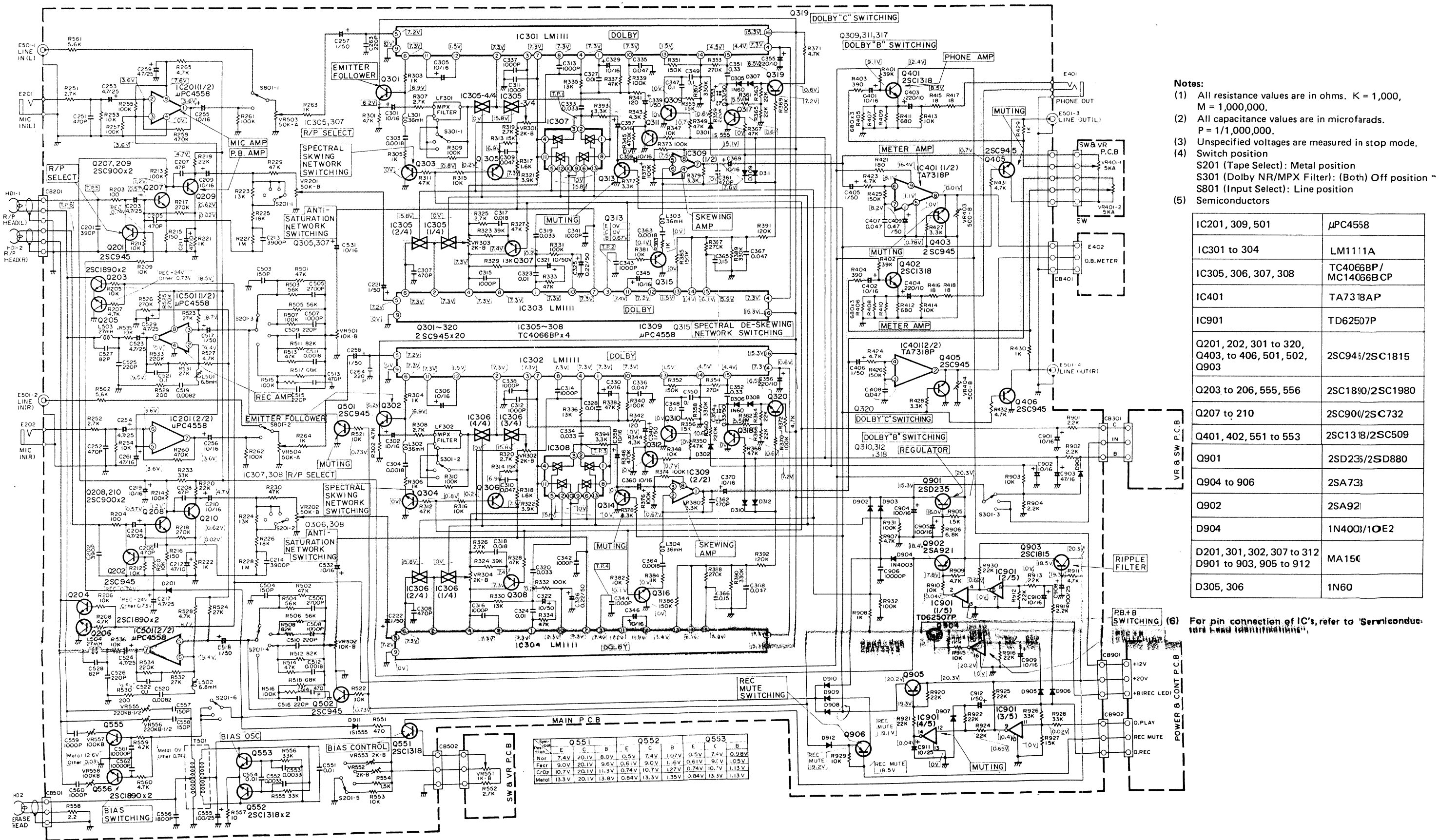


Top View

Wiring Diagram



Schematic Diagram (1/2)



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Electrical Parts List

Resistors (All resistors are carbon film, 1/4W, $\pm 5\%$ unless otherwise noted.)
 uF = microfarads, pF = picofarads

Symbol No.	Part No.	Description
Master P.C. Board		
IC's		
IC201	51T43471U02	μ PC4558C
IC301	51S47808F01	Dolby LM1111A
IC302	51S47808F01	Dolby LM1111A
IC303	51S47808F01	Dolby LM1111A
IC304	51S47808F01	Dolby LM1111A
IC305	51T47739F01	TC4066BP
or	51T40941U01	MC14066 BCP
IC306	51T47739F01	TC4066BP
or	51T40941U01	MC14066BCP
IC307	51T47739F01	TC4066BP
or	51T40941U01	MC14066BCP
IC308	51T47739F01	TC4066BP
or	51T40941U01	MC14066BCP
IC309	51T43471U02	μ PC4558C
IC401	51T41803U01	TA7318AP-2
IC501	51T43471U02	μ PC4558C
IC901	51T47738F01	TD62507P <i>F 13h</i>
Transistors		
Q201	48T43525F02	2SC945L-P
or	48S44578J01	2SC1815-Y
or	48T43525F03	2SC1815-GR
Q202	48T43525F02	2SC945L-P
or	48S44578J01	2SC1815-Y
or	48T43525F03	2SC1815-GR
Q203	48T43394P01	2SC1890E-F
or	48T41196U03	2SC1980-T
Q204	48T43394P01	2SC1890E-F
or	48T41196U03	2SC1980-T
Q205	48T43394P01	2SC1890E-F
or	48T41196U03	2SC1980-T
Q206	48T43394P01	2SC1890E-F
or	48T41196U03	2SC1980-T
Q207	48S40149P01	2SC900E
or	48S40246G01	2SC732BL
Q208	48S40149P01	2SC900E
or	48S40246G01	2SC732BL
Q209	48S40149P01	2SC900E
or	48S40246G01	2SC732BL

Symbol No.	Part No.	Description
Q210	48S40149P01	2SC900E
or	48S40246G01	2SC732BL
Q301	48T43525F02	2SC945L-P
or	48S44578J01	2SC1815-Y
or	48T43525F03	2SC1815-GR
Q302	48T43525F02	2SC945L-P
or	48S44578J01	2SC1815-Y
or	48T43525F03	2SC1815-GR
Q303	48T43525F02	2SC945L-P
or	48S44578J01	2SC1815-Y
or	48T43525F03	2SC1815-GR
Q304	48T43525F02	2SC945L-P
or	48S44578J01	2SC1815-Y
or	48T43525F03	2SC1815-GR
Q305	48T43525F02	2SC945L-P
or	48S44578J01	2SC1815-Y
or	48T43525F03	2SC1815-GR
Q306	48T43525F02	2SC945L-P
or	48S44578J01	2SC1815-Y
or	48T43525F03	2SC1815-GR
Q307	48T43525F02	2SC945L-P
or	48S44578J01	2SC1815-Y
or	48T43525F03	2SC1815-GR
Q308	48T43525F02	2SC945L-P
or	48S44578J01	2SC1815-Y
or	48T43525F03	2SC1815-GR
Q309	48T43525F02	2SC945L-P
or	48S44578J01	2SC1815-Y
or	48T43525F03	2SC1815-GR
Q310	48T43525F02	2SC945L-P
or	48S44578J01	2SC1815-Y
or	48T43525F03	2SC1815-GR
Q311	48T43525F02	2SC945L-P
or	48S44578J01	2SC1815-Y
or	48T43525F03	2SC1815-GR
Q312	48T43525F02	2SC945L-P
or	48S44578J01	2SC1815-Y
or	48T43525F03	2SC1815-GR
Q313	48T43525F02	2SC945L-P
or	48S44578J01	2SC1815-Y
or	48T43525F03	2SC1815-GR
Q314	48T43525F02	2SC945L-P
or	48S44578J01	2SC1815-Y
or	48T43525F03	2SC1815-GR

Symbol No.	Part No.	Description	Symbol No.	Part No.	Description
Q315 or or Q316 or or	48T43525F02 48S44578J01 48T43525F03 48T43525F02 48S44578J01 48T43525F03	2SC945L-P 2SC1815-Y 2SC1815-GR 2SC945L-P 2SC1815-Y 2SC1815-GR	Q552 Q553 Q555 or Q556 or	48T40832F03 48T40832F03 48T43394P01 48T41196U03 48T43394P01 48T41196U03	2SC1318NC-R 2SC1318NC-R 2SC1890E-F 2SC1980-T 2SC1890E-F 2SC1980-T
Q317 or or Q318 or or	48T43525F02 48S44578J01 48T43525F03 48T43525F02 48S44578J01 48T43525F03	2SC945L-P 2SC1815-Y 2SC1815-GR 2SC945L-P 2SC1815-Y 2SC1815-GR	Q901 or Q902 or Q903 or or	48S40662G05 48T42620F02 48T42941U01 48T42941U02 48T43525F02 48S44578J01 48T43525F03	2SD235-Y 2SD880-Y 2SA921S 2SA921T 2SC945L-P 2SC1815-Y 2SC1815-GR
Q319 or or Q320 or or	48T43525F02 48S44578J01 48T43525F03 48T43525F02 48S44578J01 48T43525F03	2SC945L-P 2SC1815-Y 2SC1815-GR 2SC945L-P 2SC1815-Y 2SC1815-GR	Q904 Q905 Q906	48T40081T03 48T40081T03 48T40081T03	2SA733 (P) 2SA733 (P) 2SA733 (P)
Q401 or Q402 or Q403 or or	48T40832F03 48S43239G02 48T40832F03 48S43239G02 48T43525F02 48S44578J01 48T43525F03	2SC1318NC-R 2SC509-Y 2SC1318NC-R 2SC509-Y 2SC1815-Y 2SC945L-P 2SC1815-GR	Diodes		
Q404 or or Q405 or or	48T43525F02 48S44578J01 48T43525F03 48T44578J01 48S43525F02 48T43525F03	2SC1815-Y 2SC945L-P 2SC1815-GR 2SC945L-P 2SC1815-Y 2SC1815-GR	D201 D301 D302 D305 D306	48T51582F01 48T51582F01 48T51582F01 48B41768G01 48B41768G01	MA150 MA150 MA150 1N60 1N60
Q406 or or Q501 or or	48T44578J01 48S43525F02 48T43525F03 48T43525F02 48S44578J01 48T43525F03	2SC945L-P 2SC1815-Y 2SC1815-GR 2SC945L-P 2SC1815-Y 2SC1815-GR	D307 D308 D309 D310 D311	48T51582F01 48T51582F01 48T51582F01 48T51582F01 48T51582F01	MA150 MA150 MA150 MA150 MA150
Q406 or or Q501 or or	48T44578J01 48S43525F02 48T43525F03 48T43525F02 48S44578J01 48T43525F03	2SC945L-P 2SC1815-Y 2SC1815-GR 2SC945L-P 2SC1815-Y 2SC1815-GR	D312 D901 D902 D903 D904 or	48T51582F01 48T51582F01 48T51582F01 48T51582F01 48T40477U01 48C40235G02	MA150 MA150 MA150 MA150 1N4003 10E2
Q502 or or Q551 or	48T43525F02 48S44578J01 48T43525F03 48T40832F03 48S43239G02	2SC945L-P 2SC1815-Y 2SC1815-GR 2SC1318NC-R 2SC509-Y	D905 D906 D907 D908 D909	48T51582F01 48T51582F01 48T51582F01 48T51582F01 48T51582F01	MA150 MA150 MA150 MA150 MA150
			D910 D911 D912	48T51582F01 48T51582F01 48T51582F01	MA150 MA150 MA150

Symbol No.	Part No.	Description	Symbol No.	Part No.	Description
Switches					
S201 S301 S609 S801	40T47780F01 40T47781F01 40T41239F01 40T45538F01	SRZ64S (Tape Select) SRZ43N (Dolby NR/MPX) Slide Select (50 Hz/60 Hz) SUF12 (Input Select)	C211 C212 C213 C214 *C217	23S40657F07 23S40657F07 8S40656F08 8S40656F08 23D44333G05	Electrolytic 47 μ F/10V Electrolytic 47 μ F/10V Mylar 0.0039 μ F Mylar 0.0039 μ F Electrolytic 4.7 μ F/25V
C219 C221 C222 C251 C252	23S40657F10 23S40657F28 23S40657F28 8S44505P45 8S44505P45	Electrolytic 10 μ F/16 Electrolytic 1 μ F/50V Electrolytic 1 μ F/50V Ceramic 470 pF Ceramic 470 pF	C253 C254 C255 C256 C257	23S40657F16 23S40657F16 23S40657F10 23S40657F10 23S40657F28	Electrolytic 4.7 μ F/25V Electrolytic 4.7 μ F/25V Electrolytic 10 μ F/16V Electrolytic 10 μ F/16V Electrolytic 1 μ F/50V
Filters & Transformer					
LF301 LF302 T501	51T42537U01 51T42537U01 25T50431F01	Filter, MPX LP-V20 Filter, MPX LP-V20 Transformer, OSC	C258 C259 C261 C263 C264	23S40657F28 23S40657F20 23S41198U27 8S40805F03 8S40805F03	Electrolytic 1 μ F/50V Electrolytic 47 μ F/25V Electrolytic 47 μ F/16V Ceramic 390 pF Ceramic 390 pF
Jacks & Plate					
E201 E202 E401 E501	9T45549F05 9T45549F05 9T45549F12 9B44393P01	Jack, Microphone 6.3 (Metal) Jack, Microphone 6.3 (Metal) Jack, Microphone 6.3 (Metal) Plate, Phono	C301 C302 C303 C304 C305	23S40657F10 23S40657F10 8S40656F04 8S40656F04 23S40657F10	Electrolytic 10 μ F/16V Electrolytic 10 μ F/16V Mylar 0.0018 μ F Mylar 0.0018 μ F Electrolytic 10 μ F/16V
Coils					
L301 L302 L303 L304 L501	24T47741F01 24T47741F01 24T47741F01 24T47741F01 24S41199U11	Inductor, 36mH Inductor, 36mH Inductor, 36mH Inductor, 36mH Inductor, 6.8mH	C306 C307 C308 C309 C310	23S40657F10 8S44505P45 8S44505P45 8S40656F21 8S40656F21	Electrolytic 10 μ F/16V Ceramic 470 pF Ceramic 470 pF Mylar 0.047 μ F Mylar 0.047 μ F
L502 L503 L504	24S41199U11 24T44499P01 24T44499P01	Inductor, 6.8mH Inductor, 27mH Inductor, 27mH	C311 C312 C313 C314 C315 C316	8S44505P49 8S44505P49 8S44505P49 8S44505P49 8S44505P49 8S44505P49	Ceramic 1000 pF Ceramic 1000 pF Ceramic 1000 pF Ceramic 1000 pF Ceramic 1000 pF Ceramic 1000 pF
Capacitors					
C201 C202 C203 C204 C205	8S44505P44 8S44505P44 23S40657F16 23S40657F16 8S44505P45	Ceramic 390 pF Ceramic 390 pF Electrolytic 4.7 μ F/25V Electrolytic 4.7 μ F/25V Ceramic 470 pF	C317 C318 C319 C320 C321	8S40656F16 8S40656F16 8S40656F19 8S40656F19 23S41198U12	Mylar 0.018 μ F Mylar 0.018 μ F Mylar 0.033 μ F Mylar 0.033 μ F Electrolytic 10 μ F/50V
C206 C207 C208 C209 C210	8S44505P45 8S44505P29 8S44505P29 23S40657F10 23S40657F10	Ceramic 470 pF Ceramic 47 pF Ceramic 47 pF Electrolytic 10 μ F/16V Electrolytic 10 μ F/16V	C322 C323 C324 C325 C326	23S41198U12 8S40656F13 8S40656F13 23T42478F20 23T42478F20	Electrolytic 10 μ F/50V Mylar 0.01 μ F Mylar 0.01 μ F Electrolytic 0.22 μ F/50V Electrolytic 0.22 μ F/50V

* When replacing any part of C217, C909, C910, C911, R916, R917 in multi-voltage models which belong to manufacture's serial number 10610001 to 10611000, be sure to exchange all six parts for specified parts on the parts list. In this case, take off 4.7 μ F and 10 μ F capacitors which may be fixed on the pattern side of the master P.C. Board.

Symbol No.	Part No.	Description
C327	8S40656F13	Mylar 0.01 uF
C328	8S40656F13	Mylar 0.01 uF
C329	23S40657F10	Electrolytic 10 uF/16V
C330	23S40657F10	Electrolytic 10 uF/16V
C333	8S40656F19	Mylar 0.033 uF
C334	8S40656F19	Mylar 0.033 uF
C335	8S40656F21	Mylar 0.047 uF
C336	8S40656F21	Mylar 0.047 uF
C337	8S44505P49	Ceramic 1000 pF
C338	8S44505P49	Ceramic 1000 pF
C339	23S40657F28	Electrolytic 1 uF/50V
C340	23S40657F28	Electrolytic 1 uF/50V
C341	8S44505P49	Ceramic 1000 pF
C342	8S44505P49	Ceramic 1000 pF
C343	8S44505P49	Ceramic 1000 pF
C344	8S44505P49	Ceramic 1000 pF
C345	23S40657F10	Electrolytic 10 uF/16V
C346	23S40657F10	Electrolytic 10 uF/16V
C347	8S41442F25	Mylar 0.1 uF
C348	8S44503P25	Mylar 0.1 uF
C349	8S41442F25	Mylar 0.1 uF
C350	8S41442F25	Mylar 0.1 uF
C351	8S44503P31	Mylar 0.33 uF
C352	8S44503P31	Mylar 0.33 uF
C353	23T42478F21	Electrolytic 0.33 uF/50V
C354	23T42478F21	Electrolytic 0.33 uF/50V
C355	23S40657F09	Electrolytic 220 uF/10V
C356	23S40657F09	Electrolytic 220 uF/10V
C357	23S40657F10	Electrolytic 10 uF/16V
C358	23S40657F10	Electrolytic 10 uF/16V
C359	23S40657F10	Electrolytic 10 uF/16V
C360	23S40657F10	Electrolytic 10 uF/16V
C361	8S44505P45	Ceramic 470 pF
C362	8S44505P45	Ceramic 470 pF
C363	8S40656F04	Mylar 0.0018 uF
C364	8S40656F04	Mylar 0.0018 uF
C365	8S44503P27	Mylar 0.15 uF
C366	8S44503P27	Mylar 0.15 uF
C367	8S40656F21	Mylar 0.047 uF
C368	8S40656F21	Mylar 0.047 uF
C369	23S40657F10	Electrolytic 10 uF/16V
C370	23S40657F10	Electrolytic 10 uF/16V
C401	23S40657F10	Electrolytic 10 uF/16V
C402	23S40657F10	Electrolytic 10 uF/16V
C403	23S40657F09	Electrolytic 220 uF/10V

Symbol No.	Part No.	Description
C404	23S40657F09	Electrolytic 220 uF/10V
C405	23S40657F28	Electrolytic 1 uF/50V
C406	23S40657F28	Electrolytic 1 uF/50V
C407	8S44503P21	Mylar 0.047 uF
C408	8S40656F21	Mylar 0.047 uF
C409	23S40657F27	Electrolytic 0.47 uF/50V
C503	8S44505P39	Ceramic 150 pF
C504	8S44505P39	Ceramic 150 pF
C505	8S40656F06	Mylar 0.0027 uF
C506	8S40656F06	Mylar 0.0027 uF
C507	8S44505P49	Ceramic 1000 pF
C508	8S44505P49	Ceramic 1000 pF
C509	8S44505P41	Ceramic 220 pF
C510	8S44505P41	Ceramic 220 pF
C511	8S40656F04	Mylar 0.0018 uF
C512	8S40656F04	Mylar 0.0018 uF
C513	8S44505P45	Ceramic 470 pF
C514	8S44505P45	Ceramic 470 pF
C515	8S44505P41	Ceramic 220 pF
C516	8S44505P41	Ceramic 220 pF
C517	23S40657F28	Electrolytic 1 uF/50V
C518	23S40657F28	Electrolytic 1 uF/50V
C519	8S40656F12	Mylar 0.0082 uF
C520	8S40656F12	Mylar 0.0082 uF
C521	8S41442F25	Mylar 0.1 uF
C522	8S41442F25	Mylar 0.1 uF
C523	23S40657F16	Electrolytic 4.7 uF/25V
C524	23S40657F16	Electrolytic 4.7 uF/25V
C525	8S44505P41	Ceramic 220 pF
C526	8S44505P41	Ceramic 220 pF
C527	8S44505P35	Ceramic 82 pF
C528	8S44505P35	Ceramic 82 pF
C529	23S40657F16	Electrolytic 4.7 uF/25V
C531	23S40657F10	Electrolytic 10 uF/16V
C532	23S40657F10	Electrolytic 10 uF/16V
C551	8S40656F13	Mylar 0.01 uF
C552	8S40656F07	Mylar 0.0033 uF
C553	8S40656F07	Mylar 0.0033 uF
C554	8S40656F13	Mylar 0.01 uF
C555	23S41198U35	Electrolytic 100 uF/25V
C556	8T44481F19	Polystyrol 0.0018 uF
C557	8S44505P39	Ceramic 150 pF
C558	8S44505P39	Ceramic 150 pF
C559	8S44505P49	Ceramic 1000 pF
C560	8S44505P49	Ceramic 1000 pF

Symbol No.	Part No.	Description
C561	8S44505P61	Ceramic 10000 pF
C562	8S44505P61	Ceramic 10000 pF
C901	23S40657F10	Electrolytic 10 uF/16V
C902	23S40657F10	Electrolytic 10 uF/16V
C903	23S41198U27	Electrolytic 47 uF/16V
C904	23S40657F14	Electrolytic 100 uF/16V
C905	23S40657F14	Electrolytic 100 uF/16V
C906	8S44505P61	Ceramic 10000 pF
C908	23S40657F21	Electrolytic 100 uF/25V
C909	23D44333G08	Electrolytic 10 uF/16V
C910	23D44333G08	Electrolytic 10 uF/16V
C911	23D44333G09	Electrolytic 10 uF/25V
C912	23S40657F28	Electrolytic 1 uF/50V
Resistors		
R203	6S44593P41	100 ohm
R204	6S44593P41	100 ohm
R205	6S44593P89	10K ohm
R206	6S44593P89	10K ohm
R207	6S44593P81	4.7K ohm
R208	6S44593P81	4.7K ohm
R209	6S44593P89	10K ohm
R210	6S44593P89	10K ohm
R211	6S44593P89	10K ohm
R212	6S44593P89	10K ohm
R213	6S44594P14	100K ohm
R214	6S44594P14	100K ohm
R215	6S44593P45	150 ohm
R216	6S44593P45	150 ohm
R217	6S44594P24	270K ohm
R218	6S44594P24	270K ohm
R219	6S44593P97	22K ohm
R220	6S44593P97	22K ohm
R221	6S44593P65	1K ohm
R222	6S44593P65	1K ohm
R223	6S44593P92	13K ohm
R224	6S44593P92	13K ohm
R225	6S44593P95	18K ohm
R226	6S44593P95	18K ohm
R227	6S44594P36	820K ohm
R228	6S44594P36	820K ohm
R229	6S44594P06	47K ohm
R230	6S44594P06	47K ohm
R233	6S44594P02	33K ohm
R251	6S44593P75	2.7K ohm

Symbol No.	Part No.	Description
R252	6S44593P75	2.7K ohm
R255	6S44594P14	100K ohm
R257	6S44594P14	100K ohm
R259	6S44594P30	470K ohm
R260	6S44594P30	470K ohm
R261	6S44594P14	100K ohm
R262	6S44594P14	100K ohm
R263	6S44593P65	1K ohm
R264	6S44593P65	1K ohm
R265	6S44593P81	4.7K ohm
R301	6S44593P81	4.7K ohm
R302	6S44593P81	4.7K ohm
R303	6S44593P65	1K ohm
R304	6S44593P65	1K ohm
R305	6S44593P65	1K ohm
R306	6S44593P65	1K ohm
R307	6S44593P75	2.7K ohm
R308	6S44593P75	2.7K ohm
R309	6S44594P14	100K ohm
R310	6S44594P14	100K ohm
R311	6S44594P06	47K ohm
R312	6S44594P06	47K ohm
R313	6S44593P93	15K ohm
R314	6S44593P93	15K ohm
R315	6S44593P89	10K ohm
R316	6S44593P89	10K ohm
R317	6S44593P70	1.6K ohm
R318	6S44593P70	1.6K ohm
R319	6S44593P75	2.7K ohm
R320	6S44593P75	2.7K ohm
R321	6S44593P79	3.9K ohm
R322	6S44593P75	3.9K ohm
R323	6S44594P04	39K ohm
R324	6S44594P04	39K ohm
R325	6S44593P75	2.7K ohm
R326	6S44593P75	2.7K ohm
R327	6S44594P06	47K ohm
R328	6S44594P06	47K ohm
R329	6S44593P92	13K ohm
R330	6S44593P92	13K ohm
R331	6S44594P14	100K ohm
R332	6S44594P14	100K ohm
R333	6S44594P06	47K ohm
R334	6S44594P06	47K ohm
R335	6S44593P92	13K ohm

* When replacing any part of C217, C909, C910, C911, R916, R917 in multi-voltage models which belong to manufacture's serial number 10610001 to 10611000, be sure to exchange all six parts for specified parts on the parts list. In this case, take off 4.7 μ F and 10 μ F capacitors which may be fixed on the pattern side of the master P.C. Board.

Symbol No.	Part No.	Description
R336	6S44593P92	13K ohm
R337	6S44594P06	47K ohm
R338	6S44594P06	47K ohm
R339	6S44594P14	100K ohm
R340	6S44594P14	100K ohm
R341	6S44594P43	120 ohm
R342	6S44593P43	120 ohm
R343	6S44593P80	4.3K ohm
R344	6S44593P80	4.3K ohm
R345	6S44594P30	470K ohm
R346	6S44594P30	470K ohm
R347	6S44593P89	10K ohm
R348	6S44593P89	10K ohm
R349	6S44594P06	47K ohm
R350	6S44594P06	47K ohm
R351	6S44594P18	150K ohm
R352	6S44594P18	150K ohm
R353	6S44594P24	270K ohm
R354	6S44594P24	270K ohm
R355	6S44593P93	15K ohm
R356	6S44593P93	15K ohm
R357	6S44594P26	330K ohm
R358	6S44594P26	330K ohm
R359	6S44594P22	220K ohm
R360	6S44594P22	220K ohm
R361	6S44594P38	1M ohm
R362	6S44594P38	1M ohm
R363	6S44593P97	22K ohm
R364	6S44593P97	22K ohm
R365	6S44593P97	22K ohm
R366	6S44593P97	22K ohm
R367	6S44594P06	47K ohm
R368	6S44594P06	47K ohm
R369	6S44594P14	100K ohm
R370	6S44594P14	100K ohm
R371	6S44593P81	4.7K ohm
R372	6S44593P81	4.7K ohm
R373	6S44594P14	100K ohm
R374	6S44594P14	100K ohm
R375	6S44594P14	100K ohm
R376	6S44594P14	100K ohm
R377	6S44593P77	3.3K ohm
R378	6S44593P77	3.3K ohm
R379	6S44593P77	3.3K ohm
R380	6S44593P77	3.3K ohm

Symbol No.	Part No.	Description
R381	6S44593P89	10K ohm
R382	6S44593P89	10K ohm
R383	6S44593P65	1K ohm
R384	6S44593P65	1K ohm
R385	6S44594P18	150K ohm
R386	6S44594P18	150K ohm
R387	6S44594P24	270K ohm
R388	6S44594P24	270K ohm
R389	6S44594P26	330K ohm
R390	6S44594P26	330K ohm
R391	6S44594P16	120K ohm
R392	6S44594P16	120K ohm
R393	6S44593P77	3.3K ohm
R394	6S44593P77	3.3K ohm
R401	6S44594P04	39K ohm
R402	6S44594P04	39K ohm
R403	6S44593P55	390 ohm
R404	6S44593P55	390 ohm
R405	6S44593P61	680 ohm
R406	6S44593P61	680 ohm
R407	6S44593P61	680 ohm
R408	6S44593P61	680 ohm
R409	6S44593P61	680 ohm
R410	6S44593P61	680 ohm
R411	6S44593P61	680 ohm
R412	6S44593P61	680 ohm
R413	6S44593P89	10K ohm
R414	6S44593P89	10K ohm
R415	6S44593P23	18 ohm
R416	6S44593P23	18 ohm
R417	6S44593P23	18 ohm
R418	6S44593P23	18 ohm
R421	6S44593P47	180 ohm
R423	6S44593P81	4.7K ohm
R424	6S44593P81	4.7K ohm
R425	6S44594P18	150K ohm
R426	6S44594P18	150K ohm
R427	6S44593P77	3.3K ohm
R428	6S44593P77	3.3K ohm
R429	6S44593P65	1K ohm
R430	6S44593P65	1K ohm
R431	6S44593P81	4.7K ohm
R432	6S44593P81	4.7K ohm
R501	6S44594P06	47K ohm
R502	6S44594P06	47K ohm

Symbol No.	Part No.	Description
R503	6S44594P08	56K ohm
R504	6S44594P08	56K ohm
R505	6S44594P08	56K ohm
R506	6S44594P08	56K ohm
R507	6S44594P14	100K ohm
R508	6S44594P14	100K ohm
R511	6S44594P12	82K ohm
R512	6S44594P12	82K ohm
R513	6S44594P06	47K ohm
R514	6S44594P06	47K ohm
R515	6S44594P14	100K ohm
R516	6S44594P14	100K ohm
R517	6S44594P10	68K ohm
R518	6S44594P10	68K ohm
R521	6S44593P89	10K ohm
R522	6S44593P89	10K ohm
R523	6S44593P99	27K ohm
R524	6S44593P99	27K ohm
R525	6S44594P24	270K ohm
R526	6S44594P24	270K ohm
R527	6S44593P81	4.7K ohm
R528	6S44593P81	4.7K ohm
R529	6S44593P48	200 ohm
R530	6S44593P48	200 ohm
R531	6S44593P99	27K ohm
R532	6S44593P99	27K ohm
R533	6S44594P22	220K ohm
R534	6S44594P22	220K ohm
R535	6S44593P89	10K ohm
R536	6S44593P89	10K ohm
R551	6S44593P57	470 ohm
R553	6S44593P89	10K ohm
R554	6S44593P69	1.5K ohm
R555	6S44594P02	33K ohm
R556	6S44594P02	33K ohm
R557	6S44593P17	10 ohm
R558	6S44593P01	2.2 ohm
R559	6S44593P81	4.7K ohm
R560	6S44593P81	4.7K ohm
R561	6S44593P83	5.6K ohm
R562	6S44593P83	5.6K ohm
R901	6S44593P73	2.2K ohm
R902	6S44593P73	2.2K ohm
R903	6S44593P89	10K ohm
R904	6S44593P73	2.2K ohm

Symbol No.	Part No.	Description
R905	6S44593P69	1.5K ohm
R906	6S44593P85	6.8K ohm
R907	6S44593P81	4.7K ohm
R908	6S44593P65	1K ohm
R909	6S44593P81	4.7K ohm
R910	6S44593P89	10K ohm
R911	6S44593P81	4.7K ohm
R912	6S44593P97	22K ohm
R913	6S44593P97	22K ohm
R914	6S44593P89	10K ohm
R915	6S44593P89	10K ohm
*R916	6S40150T97	22K ohm
*R917	6S40150T97	22K ohm
R918	6S44593P87	8.2K ohm
R919	6S44593P73	2.2K ohm
R920	6S44593P97	22K ohm
R921	6S44593P97	22K ohm
R922	6S44593P97	22K ohm
R924	6S44593P97	22K ohm
R925	6S44593P97	22K ohm
R926	6S44594P02	33K ohm
R927	6S44593P93	15K ohm
R928	6S44594P02	33K ohm
R929	6S44593P89	10K ohm
R930	6S44593P97	22K ohm
R931	6S44594P14	100K ohm
R932	6S44594P14	100K ohm
VR201	18C42061J15	Variable 50K ohm
VR202	18C42061J15	Variable 50K ohm
VR301	18C42061J12	Variable 2K ohm
VR302	18C42061J12	Variable 2K ohm
VR303	18C42061J12	Variable 2K ohm
VR304	18C42061J12	Variable 2K ohm
VR403	18C42061J23	Volume, Solid
VR404	18C42061J23	Volume, Solid
VR501	18C42061J14	Variable 10K ohm
VR502	18C42061J14	Variable 10K ohm
VR552	18C42061J12	Variable 2K ohm
VR553	18C42061J12	Variable 2K ohm
VR555	18T43406P01	Resistor, Variable 220K ohm-B ½W
VR556	18T43406P01	Resistor, Variable 220K ohm-B ½W
VR557	18C41732G04	Solid 100K ohm
VR558	18C41732G04	Solid 100K ohm

* When replacing any part of C217, C909, C910, C911, R916, R917 in multi-voltage models which belong to manufacture's serial number 10610001 to 10611000, be sure to exchange all six parts for specified parts on the parts list. In this case, take off 4.7 μF and 10 μF capacitors which may be fixed on the pattern side of the master P.C. Board.

Symbol No.	Part No.	Description
Power & Control P.C.Board		
IC's		
IC 601	51T47110F01	BA843
IC 602	51T47738F01	TD62507P
IC 603	51T47738F01	TD62507P
Transistors		
Q101 or Q102 or Q103 or	48T40832F03 48S43239G02 48T42620F02 48S40662G05 48T42620F02 48S40662G05	2SC1318NC-R 2SC509-Y 2SD880-Y 2SD235-Y 2SD880-Y 2SD235-Y
Q601 or or Q602 or or	48S44578J01 48S43525F02 48S43525F03 48S44578J01 48S43525F02 48S43525F03	2SC945L-P 2SC1815-Y 2SC1815-GR 2SC945L-P 2SC1815-Y 2SC1815-GR
Q603 or Q604 or Q605 or	48T40832F03 48S43239G02 48T40832F03 48S43239G02 48T40832F03 48S43239G02	2SC1318NC-R 2SC509-Y 2SC1318NC-R 2SC509-Y 2SC1318NC-R 2SC509-Y
Q606 or or	48S44578J01 48S43525F02 48S43525F03	2SC945L-P 2SC1815-Y 2SC1815-GR
Diodes		
D101 D601 D602 D603 D604	48T40477U01 48T51582F01 48T51582F01 48T51582F01 48T51582F01	1N4003 MA150 MA150 MA150 MA150
D605 D606 D607 D608 D609	48T51582F01 48T51582F01 48T51582F01 48T40477U01 48T40477U01	MA150 MA150 MA150 1N4003 1N4003

Symbol No.	Part No.	Description
D610 D611 D612 ZD101 ZD102	48T40477U01 48T40477U01 48T51582F01 48T40150U33 48T40150U80	1N4003 1N4003 MA150 Zener, HZ6B-3 Zener, HZ20-2
ZD103 BD101	48T40150U65 48T50629F01 48T47455F01	Zener, HZ12B-2 Bridge, WL-02 Bridge, WL-02
Jack & Fuses		
E801 F101 F102 F103	9T50261F01 65T42077U15 65T42077U15 65T42077U12	Jack, Remote Control Fuse, Semko (T800mA) Fuse, Semko (T800mA) Fuse, Semko (T400mA)
Capacitors		
C101 C102 C103 C104 C105	23S40657F10 23S40657F10 23S41198U59 23S41198U42 23S41198U42	Electrolytic 10 uF/16V Electrolytic 10 uF/16V Electrolytic 470 uF/50V Electrolytic 220 uF/25V Electrolytic 220 uF/25V
C106 C107 C108 C109 C601	23S41198U65 23S41198U56 23S40657F14 23S40657F28 8S44505P61	Electrolytic 1000 pF/25V Electrolytic 470 uF/16V Electrolytic 100 uF/16V Electrolytic 1 uF/50V Ceramic 10000 pF
C602 C603 C604 C605 C606	8S44505P61 8S44505P61 8S44505P61 8S44505P61 8S44505P61	Ceramic 10000 pF Ceramic 10000 pF Ceramic 10000 pF Ceramic 10000 pF Ceramic 10000 pF
C607 C608 C609 C610 C611	23S40657F05 23S40657F07 23S40657F10 23S40657F07 23S40657F07	Electrolytic 22 uF/10V Electrolytic 47 uF/10V Electrolytic 10 uF/16V Electrolytic 47 uF/10V Electrolytic 47 uF/10V
C612 C613	23S40657F10 23S40657F09	Electrolytic 10 uF/16V Electrolytic 220 uF/10V

●: For multi-voltage model only ■: For single voltage model only Others: Common

Symbol No.	Part No.	Description
Resistors		
R101 R102 R103 R104 R105	6S44593P57 6S44593P75 6S44593P75 6S44593P61 6S44593P61	470 ohm 2.7K ohm 2.7K ohm 680 ohm 680 ohm
R601 R602 R603 R604 R605	6S44594P06 6S44594P06 6S44593P45 6S44593P47 6S44593P77	47K ohm 47K ohm 150 ohm 180 ohm 3.3K ohm
R606 R607 R608 R610 R611	6S44593P87 6S44593P75 6S44593P97 6S44593P89 6S44593P89	8.2K ohm 2.7K ohm 22K ohm 10K ohm 10K ohm
R612 R613 R614 R615 R616	6S44593P97 6S44594P06 6S44593P89 6S44593P59 6S44593P73	22K ohm 47K ohm 10K ohm 560 ohm 2.2K ohm
R617 R618 R619 R620 R621	6S44593P59 6S44593P73 6S44593P59 6S44593P73 6S44593P93	560 ohm 2.2K ohm 560 ohm 2.2K ohm 15K ohm
R622 R623 R624 R625 R626	6S44593P89 6S44594P06 6S44593P89 6S44594P14 6S44593P85	10K ohm 47K ohm 10K ohm 100K ohm 6.8K ohm
R627 R628 R630 R631 R632	6S44593P91 6S44593P89 6S44593P75 6S44594P02 6S44593P69	12K ohm 10K ohm 3.9K ohm 33K ohm 1.5K ohm
R633 R634 R635 R636 R637 R638	6S44593P63 6S44593P87 6S44593P97 6S44594P06 6S44593P97 6S44594P06	820 ohm 8.2K ohm 22K ohm 47K ohm 22K ohm 47K ohm

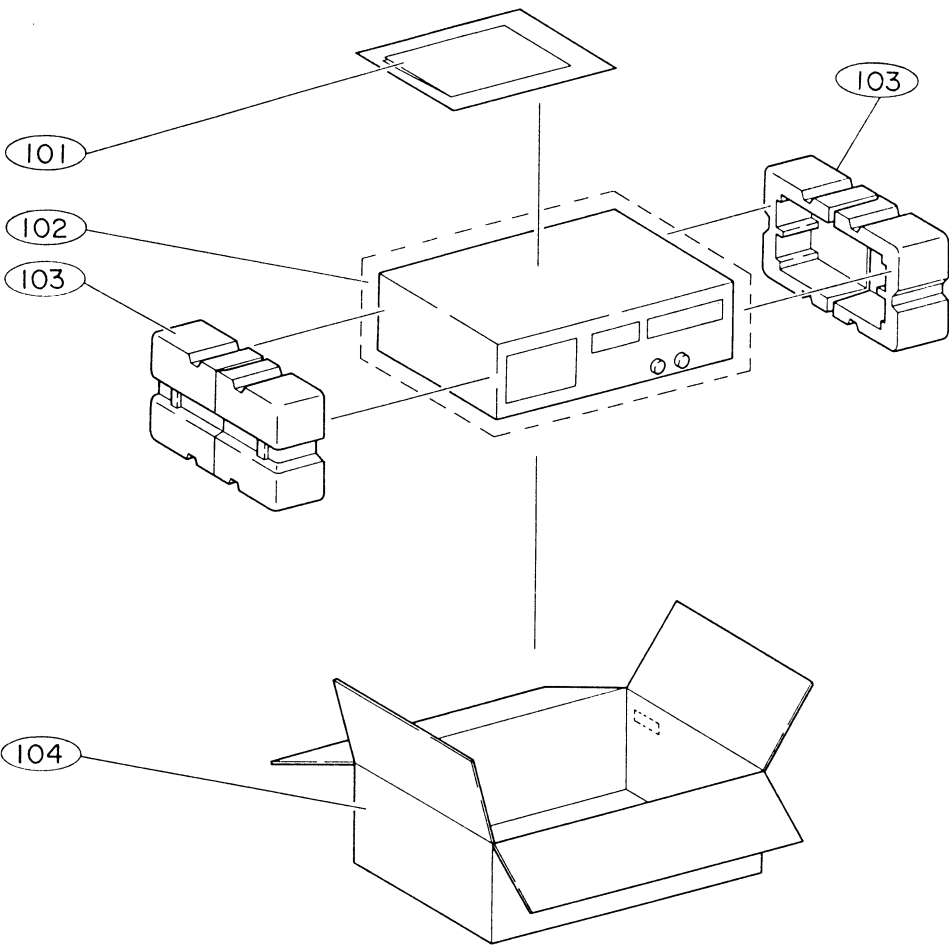
Symbol No.	Part No.	Description
Switch & Volume P.C.Board		
IC & Transistor		
IC604 Q651	51T47738F01 48T43525F02	IC, TD62507P Transistor, 2SC1815-Y
LED's		
LED604 LED605 LED606 LED607 LED608	48T45564F01 48T45564F01 48T47746F01 48T45564F01 48T45564F01	SLP-260C SLP-260C SLP-460C SLP-260C SLP-260C
Volume & Switches		
VR401 VR551 S601 S602 S603 S604 S605 S606 S607 S608	18T47779F01 18T47778F01 40T47745F01	Volume, Slide 5KA x 2 Volume, Slide 1KB Switch, Push
D651 D652 D654 D655 D657	48T44813F01 48T44813F01 48T44813F01 48T44813F01 48T44813F01	MA165TA MA165TA MA165TA MA165TA MA165TA
D658 D659 D660 D661 D662 D664	48T44813F01 48T44813F01 48T44813F01 48T44813F01 48T44813F01 48T44813F01	MA165TA MA165TA MA165TA MA165TA MA165TA MA165TA
Capacitors		
C651 C652 C653 C654	23T43247F13 23T43247F05 23T43247F07 23T43247F10	Electrolytic 47 uF/10V Electrolytic 1 uF/50V Electrolytic 3.3 uF/25V Electrolytic 22 uF/16V

Symbol No.	Part No.	Description
Resistors		
R552	6S44593P75	2.7K ohm
R652	6S44594P06	47K ohm
R653	6S44594P06	47K ohm
R654	6S44593P57	470 ohm
R655	6S44593P61	680 ohm
R656	6S44593P61	680 ohm
R657	6S44593P61	680 ohm
R658	6S44593P85	6.8K ohm
R659	6S44593P97	22K ohm
R660	6S44593P97	22K ohm
R661	6S44593P89	10K ohm
R662	6S44593P97	22K ohm
R663	6S44593P89	10K ohm
R664	6S44593P89	10K ohm
R665	6S44593P85	6.8K ohm
R666	6S44593P97	22K ohm
R667	6S44593P97	22K ohm
R668	6S44594P14	100K ohm
R669	6S44593P89	10K ohm
R670	6S44593P97	22K ohm
R671	6S44593P97	22K ohm
R672	6S44593P89	10K ohm
R673	6S44593P89	10K ohm
R674	6S44593P97	22K ohm
R675	6S44593P89	10K ohm
R676	6S44594P22	220K ohm
R677	6S44593P89	10K ohm
R678	6S44593P89	10K ohm
R679	6S44593P89	10K ohm
R680	6S44593P65	1K ohm
R681	6S44593P85	6.8K ohm
R682	6S44593P57	470 ohm
R683	6S44593P57	470 ohm
R684	6S44593P59	560 ohm
R685	6S44593P59	560 ohm
FL Counter P.C. Board		
IC801	2401-0121	LSI, HD38701A08
E801	2401-0221	FL Counter (FG46B5)
C801	2401-0411	Cap., Ceramic 100 pF
R801	2401-0311	Res., C Film 30K ohm

●: For multi-voltage model only [○: General foreign model, △: Australian model, ☆: English model], ■: For single voltage model only [North American model] Others: Common

Symbol No.	Part No.	Description
Miscellaneous		
D1	AU11C-00	Sensor, LED(TLN104)
E101	28T43812P02	Plug, AC Cord
E101	28T40916U01	Plug, AC Cord
E101	28T44061F02	Cord, AC
E101	28T45338F01	Plug, AC Cord
E402	72T47742F01	Meter, Optical
LED601	48T45518F01	LED, SEL 1331G
LED602	48T45519F01	LED, SEL 1741Y
LED603	48T45517F01	LED, SEL 1112R
HD1	F029-105	Head, Record/Play back
HD2	F030-052	Head, Erase
M1	EG-510ED-2B	Assembly, Motor
PL-1	65T50260F01	Lamp, Pilot
PL-4	65C42544U04	Lamp, Pilot
Q1	AZ11H-00	Sensor, Transistor (TPS605)
S1	FE173-11	Switch, Slide
S2	FE173-11	Switch, Slide
S101	● 40T45561F01	Switch, Power (SDL1P)
S101	■ 40T47454F01	Switch, Power (SDL1P)
S102	● 40T40705T01	Switch, Select (Voltage)
S610	40T44505F01	Switch, Touch (Play)
S611	40T44505F01	Switch, Touch (Stop)
S612	40T44505F01	Switch, Touch (F. Forward)
S613	40T44505F01	Switch, Touch (Rewind)
S614	40T44505F01	Switch, Touch (Pause)
S615	40T44505F01	Switch, Touch (Record)
S616	40T44505F01	Switch, Touch (Record Mute)
SL1	F082-044	Assembly, Solenoid
SL2	PKA16106	Assembly, Solenoid
SL3	PKA16106	Assembly, Solenoid
T101	■ 25T44724F01	Transformer, Power
	● 25T50265F01	Transformer, Power
VR503	18T40645F01	Volume, Rotary
VR504	18T40645F01	Volume, Rotary

Packing Method



Packing Assembly Parts List

Symbol No.	Part No.	Description
101	1V46400F82	Assembly, Pamphlet
101-1	28T44352F01	Plug, Output Cord
101-2	56B40230G14	Sack, Polyethylene
101-3	68P44890F68	Manual, Owner's
102	56B40230G23	sack, Polyethylene
103	56C45556F01	Tray, Packing
104	● 56C44544F37	Carton, Packing
	■ 56C44544F48	Carton, Packing
Labels		
	54B42124G01	Label, Serial No. (Rear Cover)
	54B42124G02	Label, Date Cord (Rear Cover)
	54A41677U01	Label, Head (R/P Head)
○	54B42541F06	Label, Safety (Rear Cover)
■	54A44553G01	Label, CSA (Rear Cover)

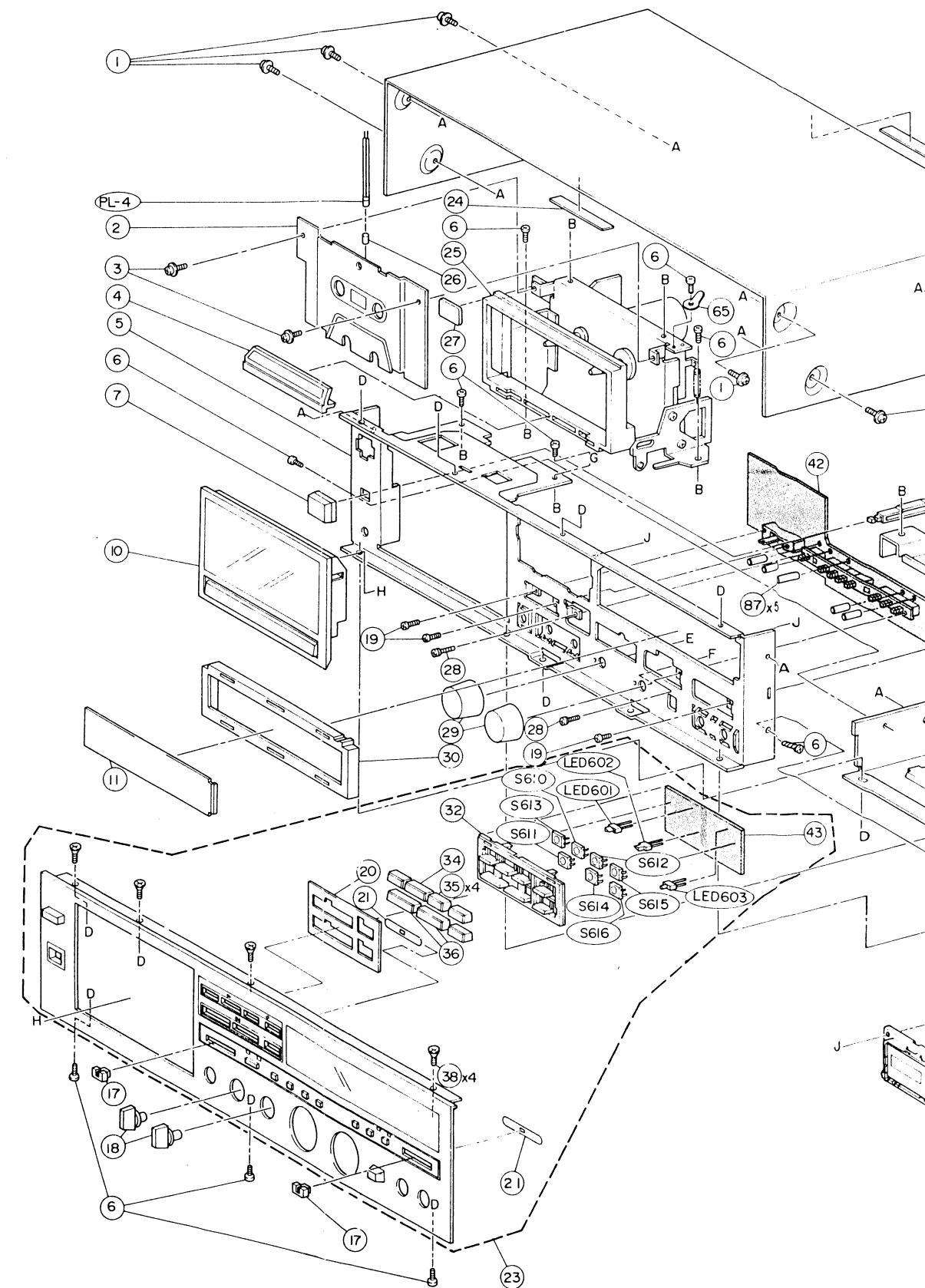
●: For multi-voltage model only [○: General foreign model, △: Australian model, ☆: English model], ■: For single voltage model only [North American model] Others: Common

Cabinet Assembly Parts List

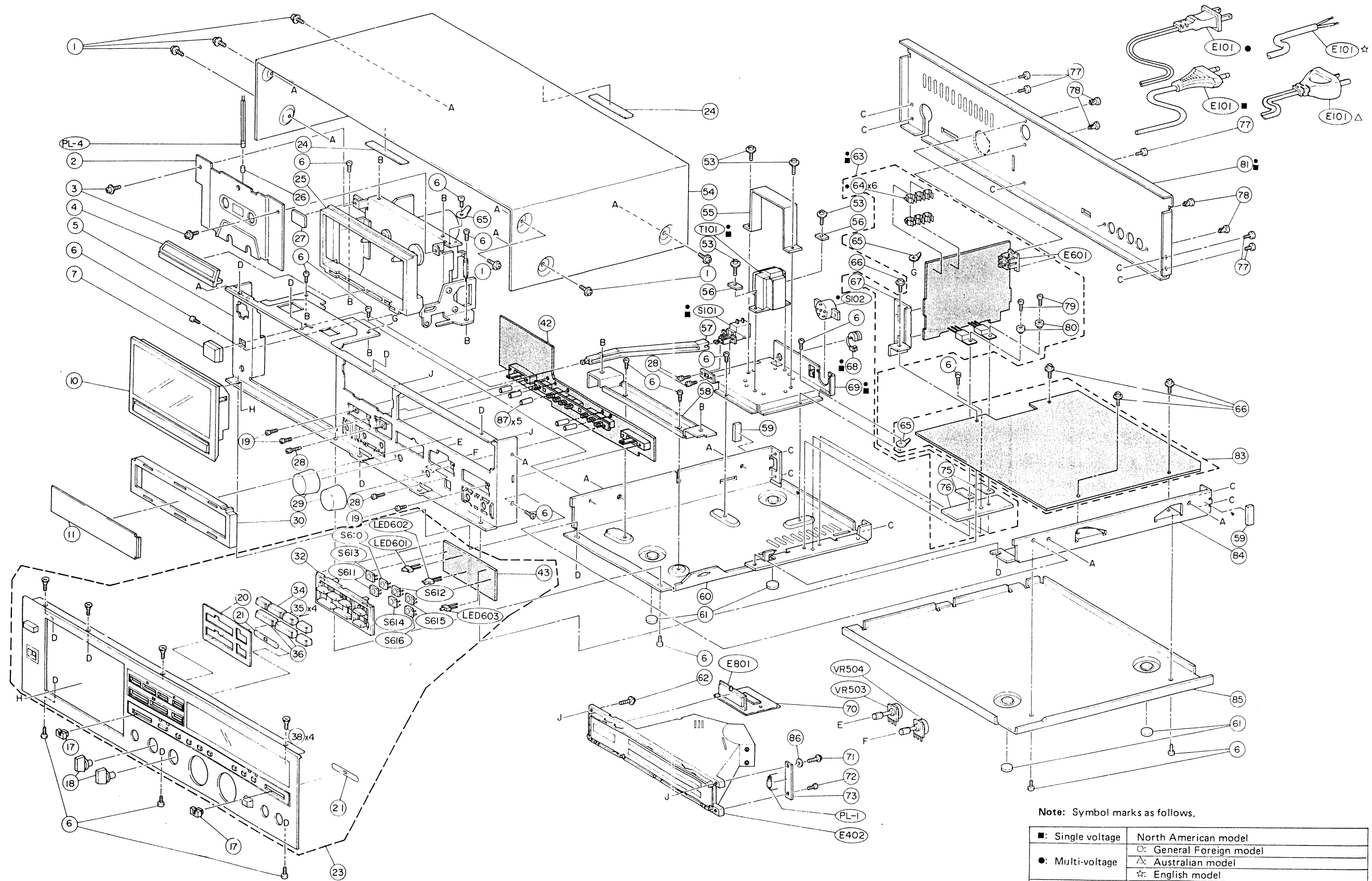
Symbol No.	Part No.	Description	Symbol No.	Part No.	Description
1	3S40036U16	Screw, Tap Tite (B/K) (M4 x 6)	64	● 9T45548F01	Holder, Fuse
2	15B44924F04	Cover, Dust	65	29A41814G01	Lug
3	3S40036U06	Screw, Tap Tite (M3 x 6)	66	3C42723U01	Screw, Cup
4	13B45448F02	Door, Escutcheon	67	7B47370F01	Support, P.C. Board
5		Chassis, Front	68	● 43B41625J02	Support, Cord
			■ 43B41625J01	Support, Cord	
6	3S44205G05	Screw, Tap Tite (M3 x 5)	69	●	Bracket, Transformer
7	36A45460F01	Knob, Power	■		Bracket, Transformer
10	1V46400F80	Assembly, Door	70	65T47743F01	Counter, FL
11	61B47368F01	Crystal, Meter	71	3S44205G08	Screw, Tap Tite (M3 x 12)
17	36A47372F01	Knob, Control	72	3S40018G01	Screw, Tap Tite (M3 x 6)
18	36A45457F01	Knob, Rotary Switch	73	84D47736F02	Panel, Lamp
19	3C40014G07	Screw, Machine (M2 x 4)	75	14A40472G02	Insulator, Transistor
20	26B51023F01	Shield, Static Electricity	76		Bracket, Heat Sink
21	43A47376F01	Spacer, Volume	77	3S44205G40	Screw, Tap Tite (M3 x 4)
23	1V46400F78	Assembly, Front Panel	78	5B41635J02	Rivet, Push
24	75B44632G04	Pad, Cushion	79	3A43146G01	Screw, Machine (M2 x 6)
25	81T50752F01	Deck, Cassette	80	43A43182P01	Spacer, Transistor
26	43A41728U09	Buch, Lamp	81	● 15C45441F03	Cover, Rear
27	43A45760F01	Spacer, Eject	■ 15C45441F04	Cover, Rear	
28	3C40014G04	Screw, Machine (M3 x 6)	82	84A45465F01	Panel, Mute
29	36A47844F01	Knob, Control	83	1V51300F63	Assembly, Master Board
30	7B47367F01	Frame, Meter	84		Chassis, Side
32	36C45466F01	Knob, Function Key	85		Cover, Bottom
34	36A45455F01	Knob, Function (20) (Play)	86	4S40075G16	Washer S.T.W.
35	36A45454F01	Knob, Function (15) (Rew, FF, Rec, Mute)	87	43A51441F01	Spacer LED
36	36A45456F01	Knob, Function (25.5)			
38	3S44205G16	Screw, Tap Tite (M3 x 6)			
42	1V46400F75	Assembly, Switch & Volume P.C. Board			
43	84B45552F01	Panel, Knob Switch			
53	3S40036U07	Screw, Tap Tite (M4 x 12)			
54	15D45442F02	Cover, Top			
55		Support, Transformer			
56	7A40871F01	Support, Transformer			
57	45B45465F01	Lever, Power Switch			
58	7B45444F01	Support, Tape Deck			
59	75A42565P13	Cushion, Rubber			
60		Chassis, Bottom			
61	75A44348F01	Pad, Felt			
62	3S44205G38	Screw, Tap Tite (M3 x 6)			
63	● 1V46400F76	Assembly, Power & Control P.C. Board			
	■ 1V51300F94	Assembly, Power & Control P.C. Board			

●: For multi-voltage model only ■: For single voltage model only Others: Common
NOTE: The parts without part numbers are not supplied.

Exploded View (Cabinet)



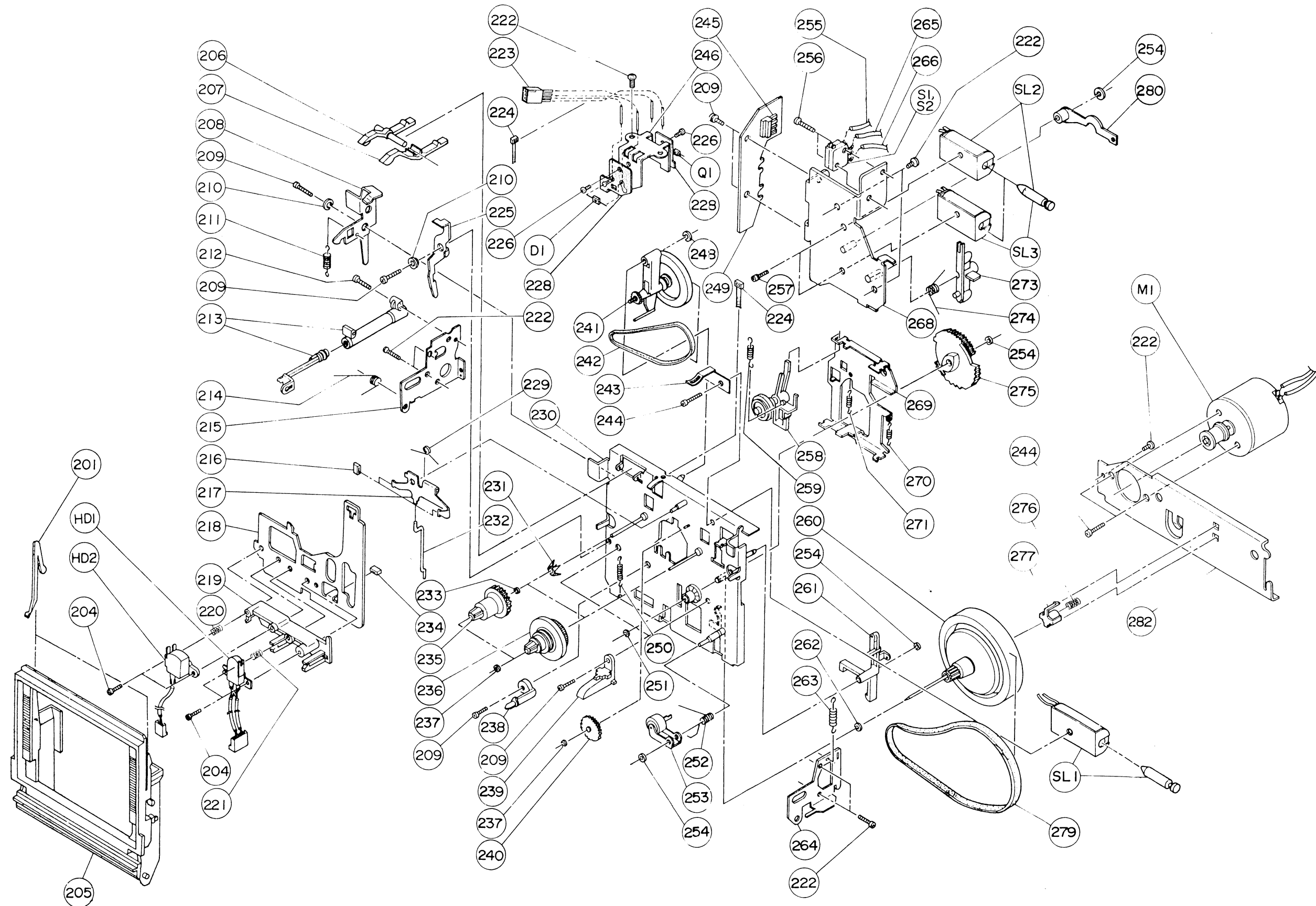
Exploded View (Cabinet)



Note: Symbol marks as follows.

■: Single voltage	North American model
○: Multi-voltage	General Foreign model
△: Multi-voltage	Australian model
☆: Multi-voltage	English model
When only the mark "●" is used, all ○, △ and ☆ marks are included.	

Exploded View (Cassette Deck)



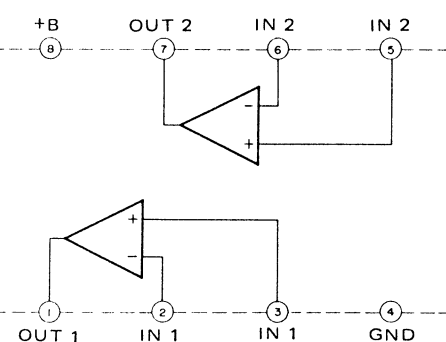
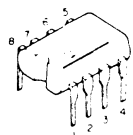
Cassette Deck Assembly Parts List

Symbol No.	Index	Part No.	Description	Symbol No.	Index	Part No.	Description
201	3-A	FK553-12	Spring, Hold	240	2-D	FN154-13	Gear, Idler
204	4-A	FG137-15	Screw, F-Lock (M2 x 13)	241	2-D	FP470-11	Assembly, Clutch
205	5-A	FR369-11	Frame, Door	242	3-D	FP463-11	Belt, Sub
206	1-B	FR357-14	Arm, Record	243	3-D	FK551-13	Spring, Cassette
207	1-B	FR356-13	Arm, Switch	244	3-D	FG114-15	Screw, Washer (M2.6 x 4.5)
208	1-B	FC11H-12	Arm, Lock Eject	245	1-E	KY130-11	Connector (8P)
209	2-B	KG194-12	Screw, Tap Tite (M3 x 6)	246	1-E	FC15H-11	Bracket, Sensor
210	2-B	FM296-11	Spacer	248	2-E	FJ123-19	Washer, Lock (φ3.5)
211	2-B	FK573-11	Spring, Arm Lock	249	2-E	FP11N-11	Panel, Connector
212	2-B	UG11D-11	Screw, Tap Tite (M2 x 12)	250	4-D	FK578-12	Spring, Head Base Hold
213	2-B	FP472-11	Assembly, Dumper	251	4-D	FJ141-12	Washer, Oil Shield
214	3-B	FK568-11	Spring, Door	252	5-D	FK569-12	Spring, Pinch Roller
215	3-B	FR349-13	Bracket, Dumper	253	5-D	F014-053	Assembly, Pinch Roller
216	3-B	FF11C-11	Rubber, Brake	254	5-D	FJ123-15	Washer, Lock (φ2.6)
217	3-B	FC15G-11	Lever, Brake	255	1-E		Tube, Vinyl (Blue)
218	4-B		Base, Head	256	1-E	FG143-26	Screw, Machine (M2.6 x 15)
219	4-B	FM283-13	Spacer, Head	257	2-E	FG143-17	Screw, Machine (M2.6 x 3)
220	4-B	FK572-12	Spring, Azimuth	258	3-E	FP469-11	Assembly, Idler
221	5-B	FK572-11	Spring, Azimuth	259	3-E	FK575-11	Spring, Play Idler
222	1-D	KG194-46	Screw, Tap Tite (M3 x 4)	260	3-E	49B50559F01	Assembly, Flywheel
223	1-D	WH16A-00	Connector, Wire	261	4-E	FR359-12	Arm, Play Solenoid
224	1-D	FH126-11	Band, Connector	262	4-E	FJ111-14	Polyester Slider (Flywheel) (φ2.5 x 0.5)
225	2-C	FR352-11	Lever, Safety	263	4-E	FK576-12	Spring, Play Solenoid Arm
226	2-C	FG137-11	Screw, F-Lock	264	5-E	FR350-12	Bracket, Door
228	2-D	FP11E-11	Panel, Sensor	265	1-F		Tube, Vinyl (Brn)
229	3-D	FK12A-11	Spring, Brake	266	1-F		Tube, Vinyl (Red)
230	3-D		Assembly, Chassis	268	2-F		Bracket, Solenoid
231	3-C	FK579-11	Spring, Back Tension	269	3-F	FR346-11	Base, Assist
232	3-C	FK11Y-11	Rod, Brake	270	3-F		Spring, Assist
233	4-C	FJ111-19	Polyester Slider (Supply Reel) (φ2 x 0.13)	271	3-F	FK577-12	Spring, Head Base
234	4-C	FP464-11	Pad, Cushion	273	2-F	FR355-13	Arm, FF Solenoid
235	4-C	FR12P-11	Assembly, Supply Reel	274	2-F	FK570-12	Spring, Solenoid Bracket
236	4-C	FR12N-11	Assembly, Take-up Reel	275	3-F	FN153-11	Gear, Play
237	5-C	FJ123-14	Washer, Lock (φ1.7)	276	3-F	FK11F-16	Spring, Thrust
238	5-C	FR358-12	Guide, Reference	277	4-F	FM281-12	Spacer, Flywheel
239	5-C	FR360-12	Guide, Cassette	279	5-F	FP462-11	Belt, Main
				280	1-G	FD12W-11	Arm, Brake
				282	4-G	FR347-12	Bracket, Motor

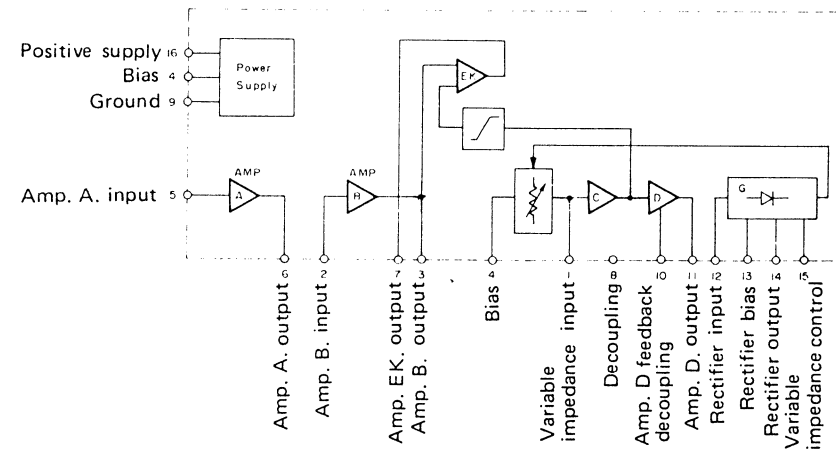
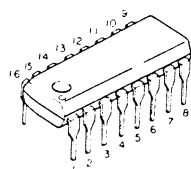
NOTE: The parts without parts numbers are not supplied.

Semi-Conductor Lead Identifications

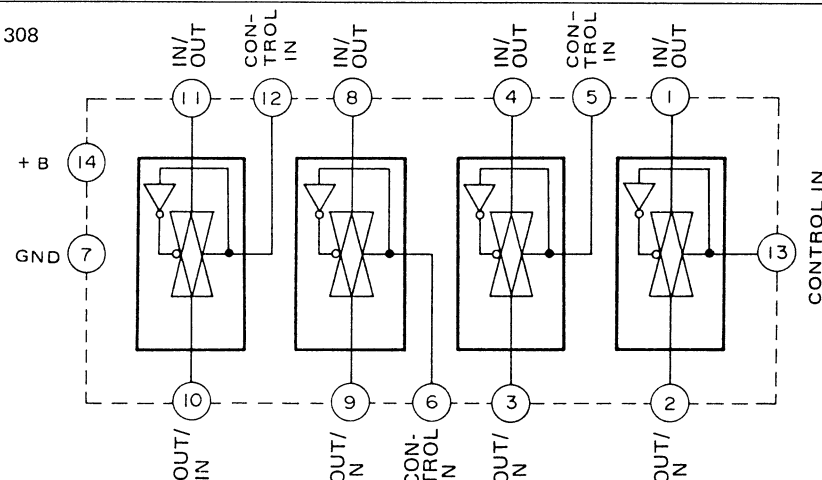
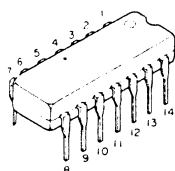
μPC4558C: IC201, 309, 501



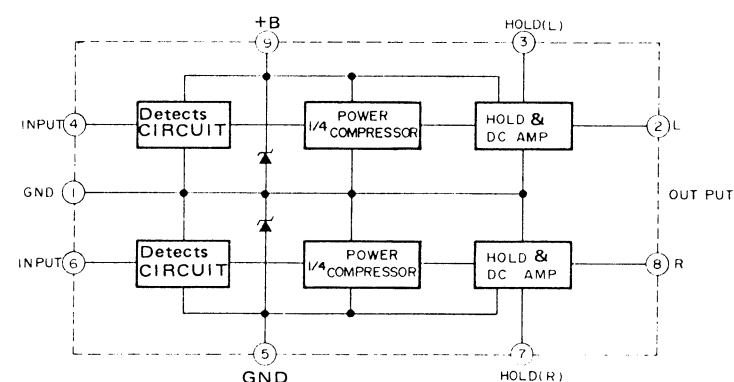
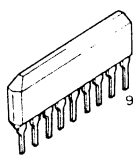
LM1111A: IC301, 302, 303, 304



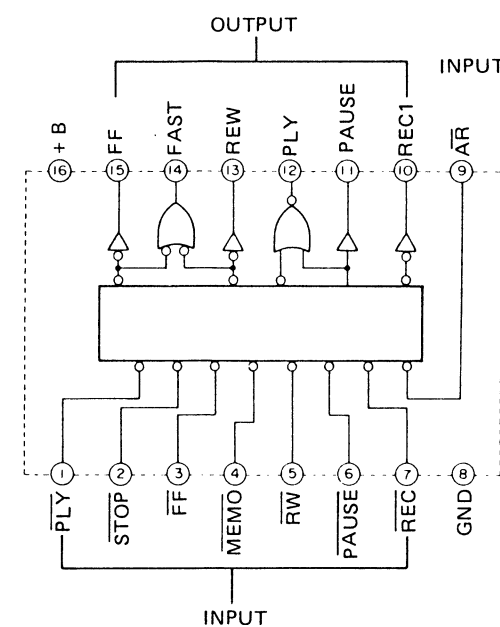
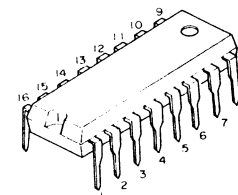
TC4066BP or MC14066BCP: IC305, 306, 307, 308



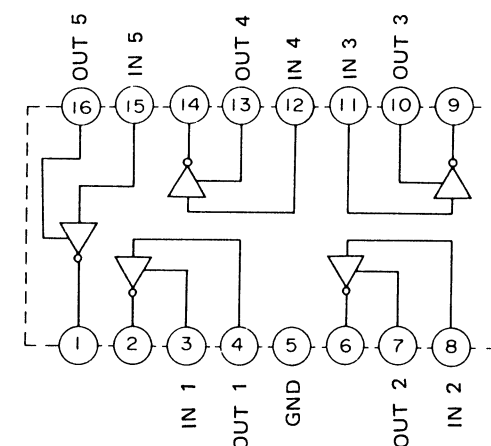
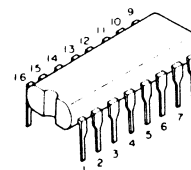
TA7318AP-2: IC401



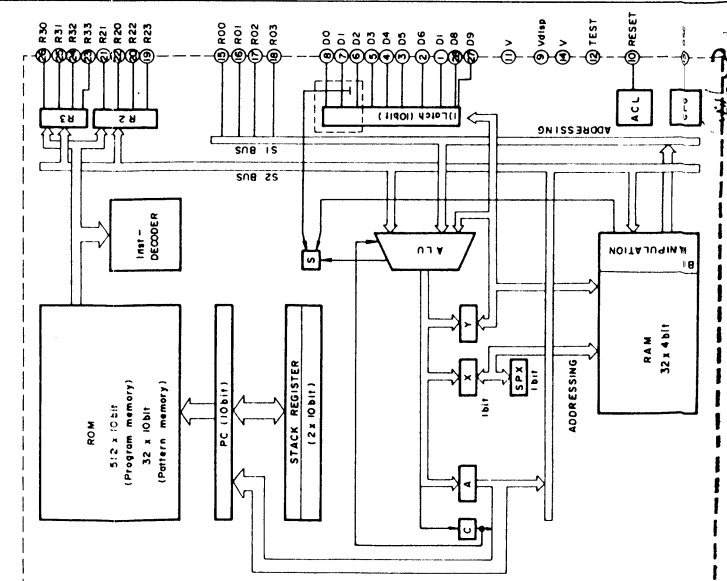
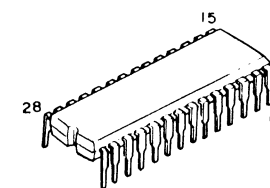
BA843: IC601



TD62507P: IC602, 603, 604, 901



HD38701A08: IC801



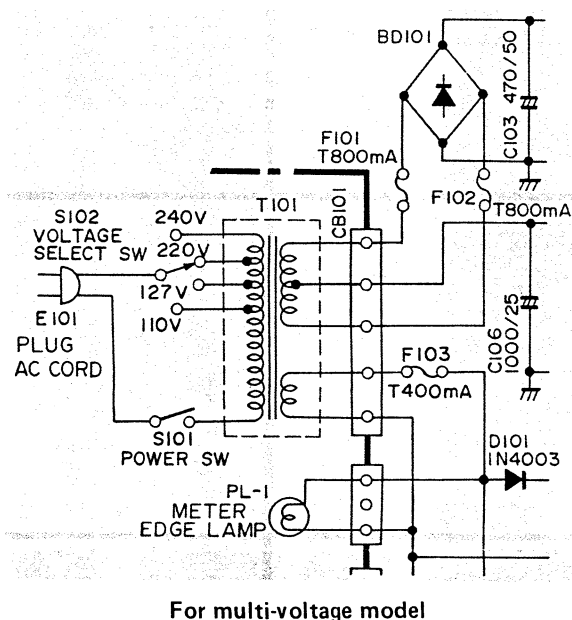
IC	IC 601	IC 602	IC 603
Transistor	Q101, Q601, Q102, Q103, Q602		Q606, Q603
Diode	LED601 LED602 LED603	BD101 D601 ZD101 D101 ZD102 ZD103 D602 D603 D604	LED604 LED605 D606, D607 D664

Notes:

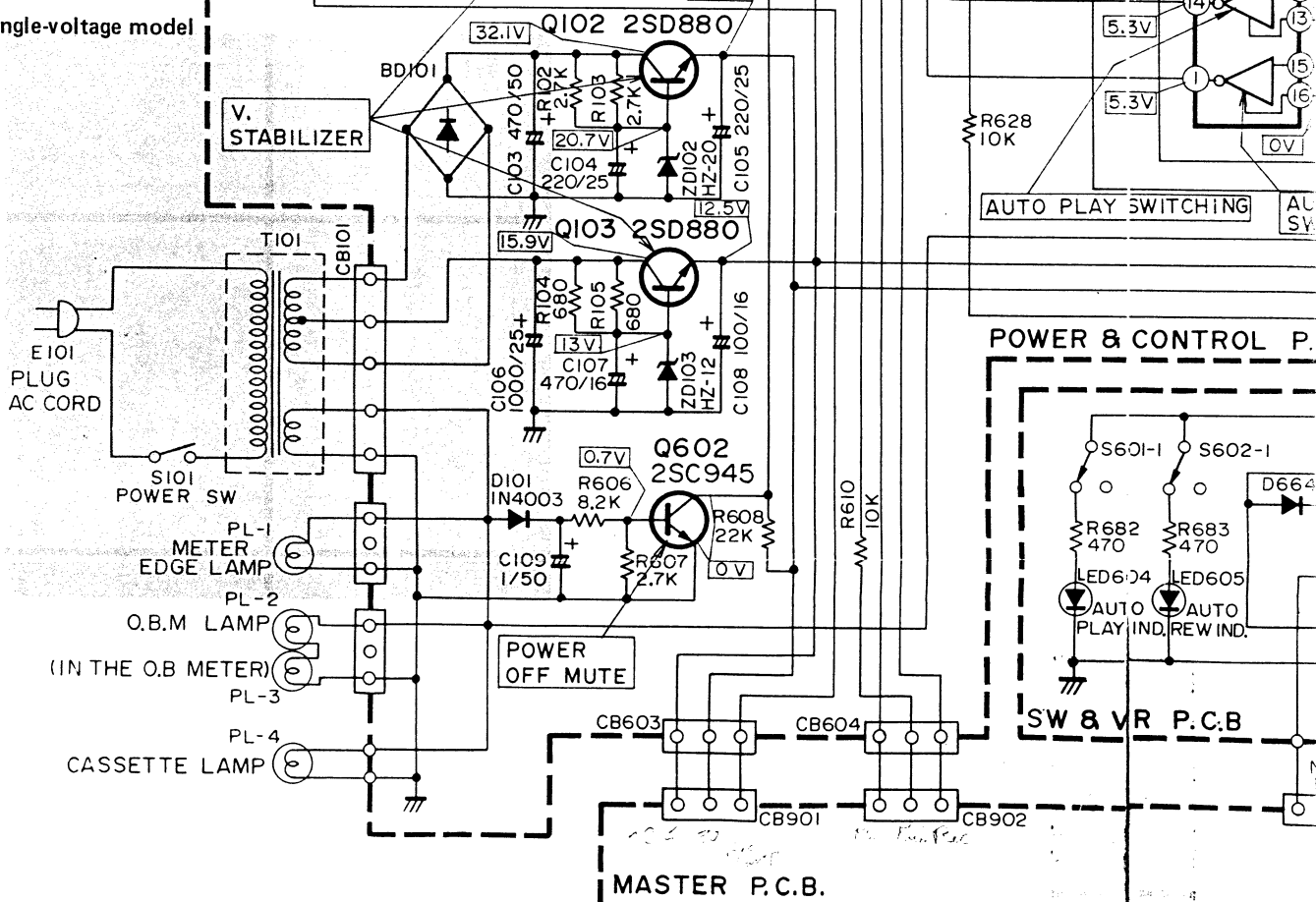
- All resistance values are in ohm, K = 1,000, M = 1,000,000.
 - All resistance values are in microfarads, P = 1/1,000,000.
 - Unspecified voltages are measured in stop mode.
 - Switch position
- S601 (Auto Play): On position
S602 (Auto Rewind): On position
S603 (Dolby NR Select): Dolby-C position
S604 (Execution): On position
S605 (Clear): (Intact)
S606 (Tape/Time): Tape position
S607 (Call): (Intact)
S608 (Write): On position
- Semiconductors

IC601	BA843
IC602 to 604	TD62507P
IC801	HD38701A08
Q1	TPS605
Q101, 603 to 605	2SC509/2SC1318
Q102, 103	2SD880/2SD235
Q601, 602, 606, 651	2SC1815, 2SC1684
D1	TLN604
D101, 608 to 611	1N4003/10E2
D601 to 607, 612 651, 652, 654, 655 657 to 662, 664	1S1555/MA165
BD101	WL02

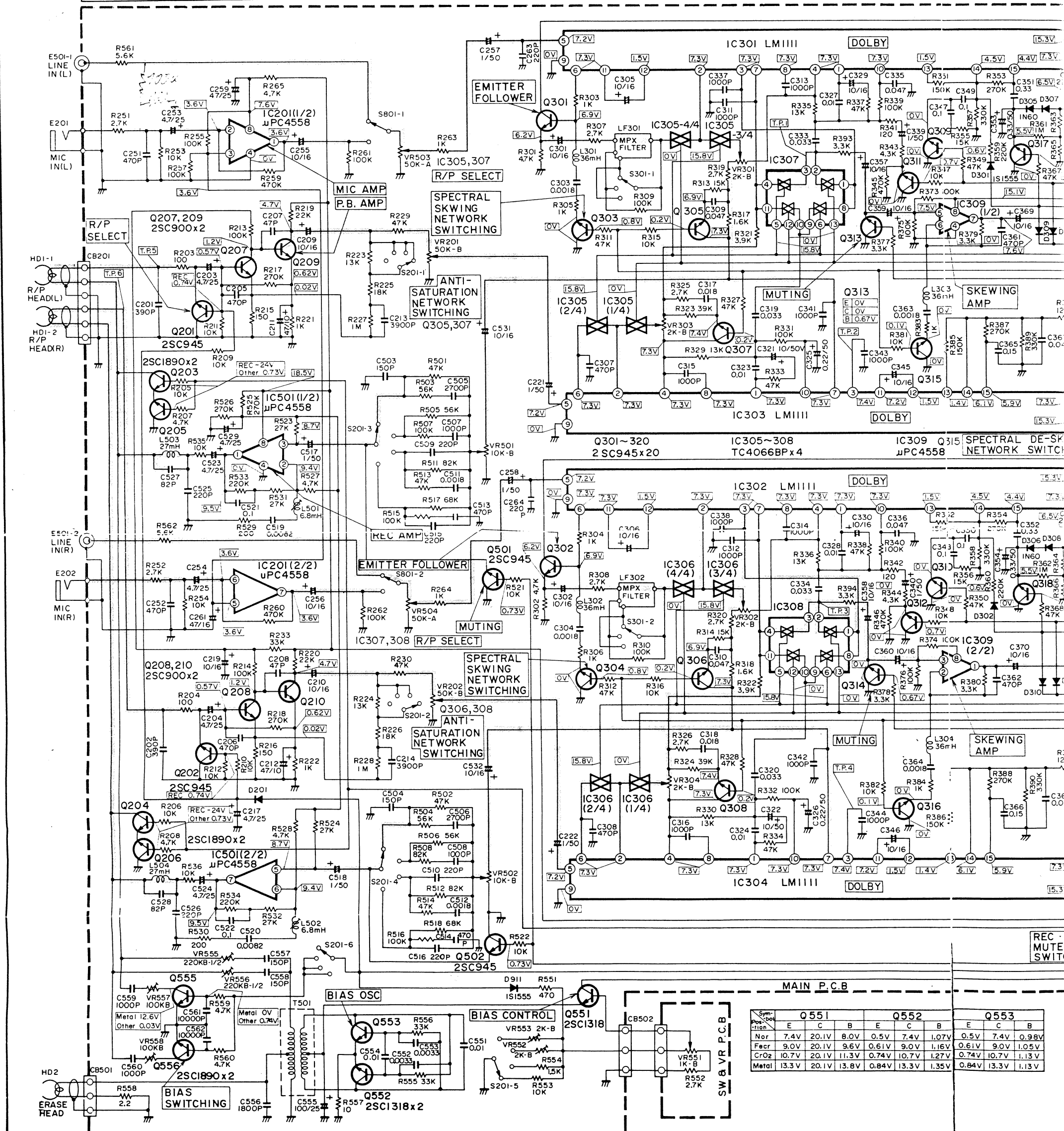
(b) For pin connection of IC, refer to "Semiconductors Lead Identifications".



For single-voltage model

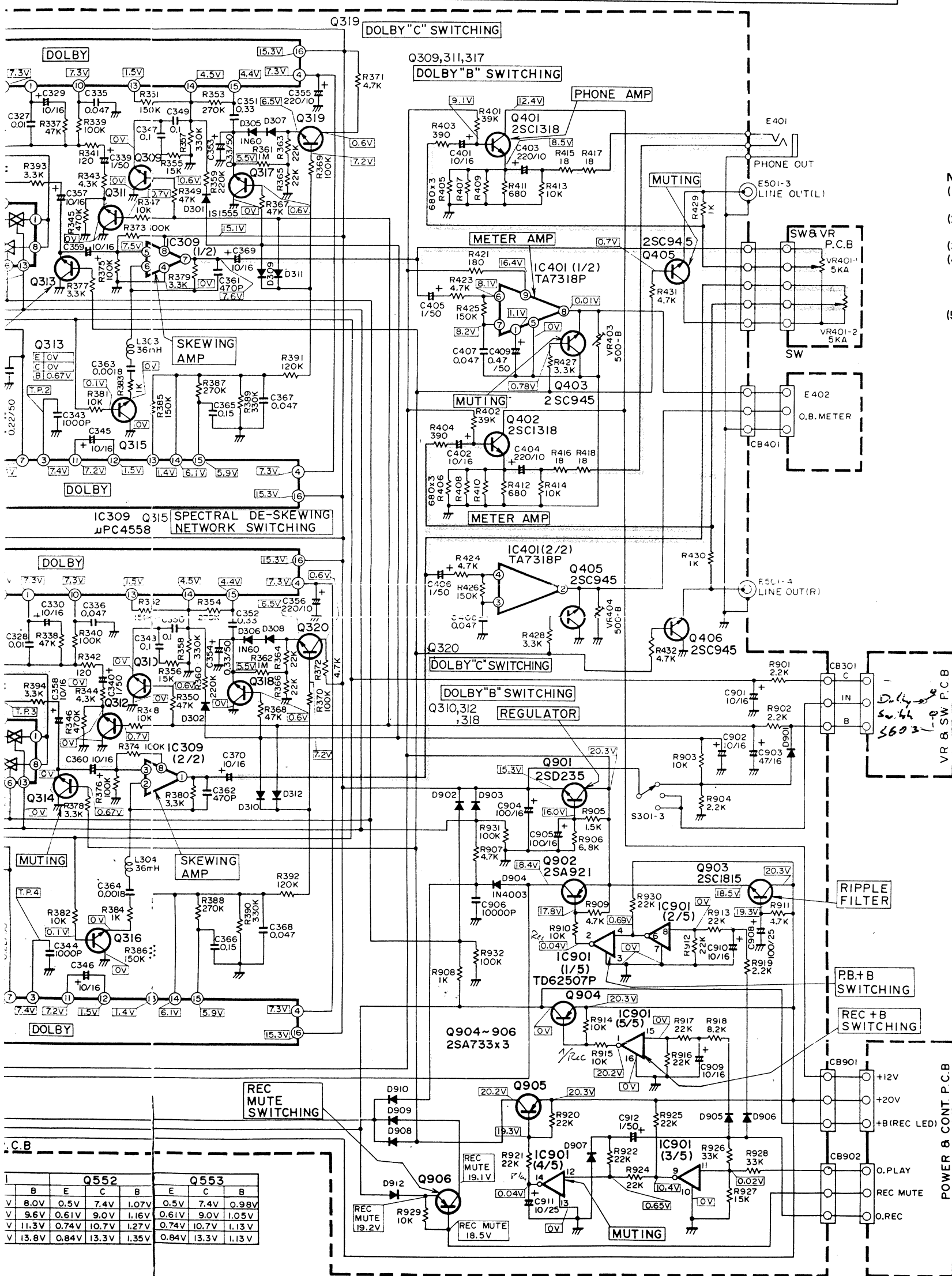


IC	IC201, IC501										IC305 IC306	IC301 IC303	IC302 IC304	IC307 IC308	IC 309						
Transistor	Q201 Q555 Q556	210		Q553 Q552	Q501 Q502		Q301 Q302	Q303 Q304	Q551			Q305 Q306	Q307 Q308			Q313 Q314	Q311, Q315 Q312, Q316	Q309 Q310			Q317 Q318
Diode	D201										D911					D301 D302 D303					



Q551			Q552			Q553		
Pos	1	2	Pos	1	2	Pos	1	2
Nor	7.4V	20.1V	8.0V	0.5V	7.4V	1.07V	0.5V	7.4V
Fecr	9.0V	20.1V	9.6V	0.61V	9.0V	1.16V	0.61V	9.0V
CrO2	10.7V	20.1V	11.3V	0.74V	10.7V	1.27V	0.74V	10.7V
Metal	13.3V	20.1V	13.8V	0.84V	13.3V	1.35V	0.84V	13.3V

C307 C308	IC309	IC401	IC901
Q313 Q314	Q311, Q315 Q312, Q316	Q309 Q310	Q317 Q318
	Q319 Q320	Q306, Q307 Q309, Q311 Q306, Q308, Q310, Q312	Q302
	D301 D302	D305, D307 D309, D311 D306, D308, D310, D312	D910, 909 D908, 909
		D902, 903 D904	D907
			D905 D906 D901



Notes:

- (1) All resistance values are in ohms. K = 1,000, M = 1,000,000.
- (2) All capacitance values are in microfarads. P = 1/1,000,000.
- (3) Unspecified voltages are measured in stop mode.
- (4) Switch position
S201 (Tape Select): Metal position
S301 (Dolby NR/MPX Filter): (Both) Off position
S801 (Input Select): Line position
- (5) Semiconductors

IC201, 309, 501	μPC4558
IC301 to 304	LM1111A
IC305, 306, 307, 308	TC4066BP/ MC14066BCP
IC401	TA7318AP
IC901	TD62507P
Q201, 202, 301 to 320, Q403, to 406, 501, 502, Q903	2SC945/2SC1815
Q203 to 206, 555, 556	2SC1890/2SC1980
Q207 to 210	2SC900/2SC732
Q401, 402, 551 to 553	2SC1318/2SC509
Q501	2SD235/2SD88U
Q904 to 906	2SA733
Q902	2SA921
D904	1N4003/10E2
D201, 301, 302, 307 to 312 D901 to 903, 905 to 912	MA150
D305, 306	1N60

For pin connection of IC's, refer to "Semiconductors Lead Identifications".